DOCUMENT RESUME

ED 203 459 EA 013 647

AUTHOR Fullan, Michael
TITLE The Role of Human Agents Internal to School Districts in Knowledge Utilization.
INSTITUTION Far West Lab. for Educational Research and Development, San Francisco, Calif.
SPONS AGENCY National Inst. of Education (DHEW), Washington, D.C.
PUB DATE Apr 80
CONTRACT 400-80-0103
NOTE 92p.: For related documents, see EA 013 645-650.

EDRS PRICE MF01/PC04 Plus Postage.
DESCRIPTORS *Administrator Role; *Change Agents; Educational Environment; *Educational Innovation; Elementary Secondary Education; Principals; Research Needs; Resource Staff; School Districts; Superintendents; *Teacher Role
IDENTIFIERS *Knowledge Utilization

ABSTRACT

This literature review highlights the large amount of research needed on the role of educators within school districts in planned educational change and knowledge utilization. After first defining knowledge utilization as the use of information (from research or practice) in educational products or ideas, the author identifies three factors affecting knowledge utilization, including the nature of the information (such as its relevance or quality), the approach used to promote the change, and the organizational, individual, and structural characteristics of the setting in which knowledge utilization takes place. These factors are kept in mind as the author reviews the research on (1) teachers as individual or group knowledge users and as agents of change; (2) principals as knowledge processors and users and as agents of knowledge utilization; (3) district specialists and consultants as important sources of knowledge utilization; and (4) district superintendents as initiators or facilitators of change. The author concludes that much research is needed both on the everyday roles and activities these four groups perform in knowledge utilization and educational change, and on those characteristics of the settings which are important for each group's utilization of knowledge. (RW)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED203459

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

THE ROLE OF HUMAN AGENTS INTERNAL TO SCHOOL DISTRICTS IN KNOWLEDGE UTILIZATION

Michael Fullan

Ontario Institute for Studies in Education

April 1980

Prepared for Program on Research and Practice, National Institute for Studies in Education and Far West Educational Laboratory. I would like to thank Paul Berman, Ernest House, Karen Louis, Matt Miles and Sam Sieber of our Knowledge Synthesis working group for valuable comments on an earlier draft. Rolf Lehming and Michael Kane of NIE and Paul Hood of the Far West Lab also provided important support.

EA 013 642

The purpose of this paper is to explore what is known about the role of knowledge use and users within the school district level in order to identify a research agenda for examining knowledge use and school improvement.* There are seven main sections to the paper. The first section describes the difficulties of obtaining a clear definition and adequate data on the concept of knowledge utilization (KU). Section Two provides an overview of causes of KU. Sections Three through Six examine the roles of four main groups internal to the school district - teacher, principal, district specialists/consultants, district administrators. In the final section a research agenda is formulated arising from the analysis of the previous sections. This final section then, synthisizes the paper as a whole.

I. DIFFICULTIES IN KNOWING WHAT KNOWLEDGE UTILIZATION IS

Any field which cannot define and/or obtain the necessary data on its dependent variable is in for a struggle. Such is the problem faced in the field of knowledge utilization (KU). In general, it can be said that my domain of interest concerns

---

*Five other papers on related aspects of the field have been written by colleagues in the knowledge synthesis group: Paul Berman "Toward an Implementation Paradigm of Educational Change", Ernest House "Three Perspectives on Innovation", Karen Louis "The Role of External Agents in Knowledge Utilization", Matt Miles "Generic Properties of Schools in Context. The Backdrop for Knowledge Utilization and School Improvement", and Sam Sieber "Incentives and Disincentives for Knowledge Utilization in Public Education".

use of information, either in the form of ideas or products; information which comes from research or practice. The problem is that there are numerous dimensions and meanings of KU, not all of which are measurable. A review of this complexity will not provide any final clarity, but should help avoid the confusion which arises when KU is treated as a global or homogeneous concept. At the risk of initial confusion, I would like to identify a range of meanings and levels which can be found in the main body of work dealing with KU in education. As the reader may soon conclude we might call this method multistrangulation. It will at least take your breath away, if not render you unconscious.

Let us begin with the seemingly simplest level - the individual knowledge user. If the use of specific information is at stake (that is, an individual seeks or receives a particular set of information on a given topic), a first approximation of defining use may take the form of Louis' (1978) definition:

"1) non-users: persons who indicated that they had not read the information (that is, they received it, but did not look at it)

2) readers: persons who indicated that they had read the information, but did not indicate that they had actually applied it in any way

3) planners: persons who indicated that the information had been used for planning innovations or changes....., but where such plans had not already been put into effect

4) implementers: persons who indicated that all or part of the information had actually been used" (Louis, 1978:5).

This appears to be relatively straightforward until we add five complications. First, the specific behavioural use of information may not be the most frequent or even most valuable knowledge outcome. Weiss stresses that decision-makers often "use" knowledge for one or more of the following purposes:

> "to understand the background and context of program operation, stimulate review of policy, focus attention on neglected issues, provide new understanding of the causes of social problems, clarify their own thinking, reorder priorities, make sense of what they have been doing, offer ideas for future directions, reduce uncertainties, create new uncertainties and provoke rethinking of taken-for-granted assumptions, justify actions, support positions, persuade others, and provide a sense of how the world works" (Weiss, 1980:6).

In short, information could be used to enlighten complex issues even by showing confusion, complexity and conflicting research findings on a particular topic (see especially, Lindblom and Cohen, 1979). In this case the role of information is to stimulate thinking and to have a long run cumulative impact on thinking and decisions. Needless to say this outcome will be extremely difficult, if not impossible to measure or prove on any large scale involving numerous users. (See also Weiss, 1980b, and Larsen, 1980).

A second distinction which must be recognized, if we are to sort out what is known about KU, is that some forms of KU

refer to whether a specific project or program was used, while others concern whether a general body of knowledge in a given problem area was drawn upon. Table 1 combines the first (distinction between specific use and diffuse or enlightenment use) and second distinction (whether the source is a specific program or a body of knowledge in a program area).

TABLE 1. Source and Use of KU

		Source	
		Specific Program	Program Area
USE	Specific	I	II
	Diffuse	III	IV

(excerpted from Fullan 1980)

The field of career education can be used to illustrate that all four outcomes are probable. Type I occurs when a specific career education program is adopted and used by an individual or group of individuals. Type III which seems to involve a contradiction in terms is in fact very likely to occur with any large body of users. Research on implementation has amply demonstrated that there are great variations in use involving any given specific program (on career education, see Farra

et al, 1979). To make matters one step more complicated, Type III would involve at least two types of use, 1) specific variations of the program in which some direct and observable form is used and 2) general or enlightenment use (as in Weiss) which cannot possibly or feasibly be observed in the short run. Types II and IV occur when a would be user obtains information not on a specific career education program, but on the field of career education (i.e., information on a whole array of alternative program possibilities). Again in this case use could occur when a particular program was selected or developed from the array (Type II), or when the information in general, stimulates thinking, questionning, and new behaviour, without an observable program being selected/developed in the short run or ever (Type IV).

A third complication in all of this is that sometimes research on KU consists of examining individualistic users (that is, each individual is seeking or receiving information as an individual, e.g., Sieber et al, 1972), while at other times groups of users are involved (as when an innovative program is used in a whole school district or in multiple classrooms (e.g., Berman and McLaughlin, 1973). Thus, the causal factors related to KU could differ in a number of respects depending on which of these two instances are at hand. Moreover, it is extremely difficult to compare the two approaches. For example, are program focussed changes in which numbers of teachers are expected to work with the

same program or information, more effective than diffuse and variegated information in which individual teachers choose different things.

A fourth area of confusion occurs when different, but overlapping aspects of the KU are characterized as a process. Fortunately, we can probably confine ourselves to two of these formulations - one arising from research on dissemination; the other from implementation. The Dissemination Analysis Group (an OE task force of experts) agreed that four usages of dissemination could be defined:

Spread: The one-way casting out of knowledge in all its forms: information, products, ideas and materials, "as though sowing seeds"

Exchange: The two-way or multi-way flow of information, products, ideas and materials as to needs, problems and potential solutions

Choice: The facilitation of rational consideration and selection among those ideas, materials, outcomes of research and development, effective educational practices and other knowledge that can be used for the improvement of education

Implementation: The facilitation of adoption, adaption and installation of improvements (DAG, 1977).

A different, but overlapping formulation has arisen from the considerable body of research on implementation of educational programs. The most common version describes three broad phases - mobilization, implementation and institutionalization (Berman and McLauglin, 1978, Berman, 1980). Both the dissemination and implementation versions are legitimate.

The former is intended to describe different types of dissemination rather than a process, while the latter purports to describe the phases in a process of change. Taken together, the dissemination and implementation perspectives encompass several different forms of KU ranging from diffuse uses (e.g., spread and exchange) to particular applications (e.g., choice or mobilization, and implementation).

The fifth and final complication can be noted - mostly we have been assuming that KU refers to an individual or group obtaining or receiving information for their own direct use; however, many KU's obtain information which they hope will be used by others including and sometimes not including themselves. I am not referring to formal linkers, but to any school level personnel - the principal who obtains curricular information which he or she hopes teachers will use, the teacher who obtains or receives information which he or she intends to advocate for use by other teachers, and so on. (Hood and Blackwell, 1976, found that 92% of the people in their sample of users, passed on the information to others).

Given the several variations identified above, the implications for the study of KU can be stated:

(1) KU itself is multi-dimensional and complex. Stated another way, the study of KU is itself a Type IV problem (see Table 1) which may be best captured in Weiss' quote stated earlier. There are multiple diffuse and specific variations of KU.

(2) It is important to recognize these variations in KU in order not to be mislead by research into making erroneous or superficial generalizations. For example, we have said nothing yet about factors associated with effective or ineffective KU (Section II). Clearly, one should be aware that different causal factors and combinations of factors will operate depending on the version of KU under study. Generalizations about KU which fail to take this into account may be misleading or superficial (see Larsen, 1980).

(3) After all is said and done, we can restate in more specific terms the purpose of the rest of this paper. We are interested in the role of human agents within the school district in KU whether this is in the context of a specific innovation or information more generally.

(4) Since our long term interest is in KU for school improvement, our primary interest is in KU by the teacher and the roles of other school and district personnel vis-a-vis teacher KU.

(5) Thus, the goal of the paper is to identify what research can tell us about the role of human agents, particularly in respect to KU by teachers, for the purpose of specifying gaps and needed research to fill these gaps.

II. AN OVERVIEW OF CAUSES OF KU

In Sections Three through Six, I will be examining the roles of particular groups within the school district. These

groups, of course, will be considered in their roles as possible agents of KU. In this sense, they are "causes" of KU. However, before examining particular roles, it is useful to provide a general overview of the main types of factors which affect KU. This will serve as an important backdrop to the remaining sections.

My purpose here is not to carry out an exhaustive review of literature on KU. In fact, the overview will be quite general, serving mainly to provide a sense of the main types of factors associated with KU. As an organizer for this task, I would like to suggest that KU is a function of three major sets of factors: (1) the nature of the information, (2) the approach used and (3) characteristics of the setting of use.

Information.

Weiss (1980) examined the perceptions of 155 decision-makers in mental health fields in relation to their reactions to 50 research report abstracts which they were asked to read. There are some limitations to the study since the research is based on self-reports, confined to decision-makers, and (for our purposes) is in the field of mental health, not education. Nonetheless, the findings are instructive. Weiss found that five factors were related to "perceived usefulness" of the research information: 1) perceived relevance, 2) perceived research quality, 3) conformity to user's prior expectations, 4) action feasibility or direction, and 5) challenge to the status quo.

Weiss claims that users apply a "truth test" (factors 2 and 3 - research quality, and conformity to previous knowledge), and a "utility test" (factors 4 and 5 - action feasibility and challenge to the status quo).* Weiss contends that decision-makers will use research which has positive values on the five dimensions, and that use "is a much broader and more diffuse concept" than the "research for problem-solving literature" adopts.

It is very revealing to note the parallel between some of Lippitt and Gibb's work at Bethel in the late 1950's and that of Weiss.** Lippitt and Gibb were interested in what is needed, if knowledge is to influence future behaviour. They suggested three factors, 1) clarity about the concept, or information needed, 2) relevance of information - user must be able to see that the information is relevant to his or her concerns and 3) action images - receiver must form some mental picture of what specific actions or interventions he or she could do in order to use the formation. The Bethel experiments tested three treatments (1, 1+2, and 1+2+3), and found progressively greater utilization of knowledge (as measured by unobtrusive behavioural measures of what was said and done with the information). Two points stand out in comparing the Weiss and

*The remaining factor 1, relevance, was based on a single item, and was not used by Weiss on the truth and utility tests.

**Thanks to Matt Miles for calling this work to my attention.

Lippitt, Gibb research. First, there is substantial overlap - the relevance and action factors are very similar in both studies. Second, Weiss was probably not aware of the earlier research (she does not cite it), since it was not widely written up, lending credence to the likelihood that the findings were independently discovered.

Other research on implementation has also confirmed that relevant and specific information and materials is often missing, and that general or diffuse information is not helpful for stimulating KU. For example, Emrick and Peterson (1978) carried out a cross-comparison synthesis of five major change projects. One of the five findings common to the research was that "material resources at the 'how to' level are needed, particularly for utilizations involving organizational or instructional change" (Emrick and Peterson, 1978:73).

Havelock and Havelock (1973:22) in their national survey of innovations in the U.S. school districts (as reported by superintendents) found that "confusion among staff about the purpose of the innovation" and "lack of precise information about the innovation" were two of the most frequently cited barriers to use (see also Hood and Blackwell, 1976).

A directly related area of controversy concerns the question of whether the main problem is lack of good, usable "products", or whether it is the failure to use good products which are already developed and in existence. It is likely that both factors are operating (depending on the topic and

situation) which contributes to the confusion when generalizations are attempted only to find contradictory data. Certainly, the lack of products in some areas of need is a major problem. Thus, the R&D Utilization Program as the title implies, was directed at stimulating use of R&D (in seven projects ranging from reading, math, career education to in-service materials), using intensive interactive support systems to aid school districts in implementation. One of the major problems encountered concerned the lack of R&D products in some significant areas (Louis, 1980).

Hood and Blackwell, 1976: III:13 also found that only a minority of teachers and principals thought that the amount and quality of information was very adequate. This is consistent with the findings just reported, but the solution is deceptive, and appears not to be simply the production of better R&D materials, although this is part of it. We know for example, that production of intact R&D materials is not closely related to implementation (Fullan and Pomfret, 1977; Berman, 1980). We know that adaptation and the use of a variety of materials is related to implementation (while lack of adaptation is often not*, Armor et al, 1976; Berman, 1980). Recalling the more enlightenment, diffuse and developmental notion of KU, we can also surmise that

*This is not to say that specific, validated products are not effective - they frequently are (Emrick and Peterson, 1978; Louis, 1980).

working with ideas and resources to be developed at the individual and group level may have (we do not know) more pervasive effects than attempting to use a specific product. Further, some innovations such as the NEA in-service materials project (Louis, 1980) are deliberately diverse because they are directed at a variety of different needs. The way out of the dilemma may lie in the conclusion that clearer, "how to" materials are needed, but that clarification is as much of a process during implementation, as it is intrinsic to the materials prior to implementation (see Berman, 1980).

In considering the meaning of the above research one gets a sense of general agreement that information which is relevant, clear, amenable to action images, etc. is most effective for KU. The term "general" is stressed because the research is not specifically comparable. The concepts used by different authors overlap and vary in imprecise ways, but the direction for needed research to clarify the main concepts is evident.

There is another body of research on "information systems" in education which I do not review in detail here, partly because this work is amply described in other documents, and partly because it has not yet adequately examined utilization (although I do draw on aspects of this research in later sections). Suffice it to say that a good deal of research is currently ongoing on the education information system,

which includes knowledge base or organization of information, dissemination and linkage structures, and information seeking or receiving behaviour. The most comprehensive analysis of this work is being carried out in the Educational Dissemination Systems Support Program of the Far West Laboratory (see Hood, 1979; Hood and Blackwell, 1979; Paisley, Cirksena and Butler, 1979; Hood and Blackwell, 1976). Other large scale information use research on which I draw later can also be found in the Building Capacity for Improvement of Educational Practice project (Madey et al, 1979), the R&D Utilization project (Louis et al, 1979), the National Diffusion Network (Emrick, 1977), and so on (see also Raizen, 1979 for an overview of NIE's dissemination programs).

Approaches to Information Use.

The question of what are the best strategies or approaches to facilitate effective KU is an enormous one. Again, I wish to provide a sense of the main findings rather than a thorough review. As a forewarning to the problems in answering this question, the reader is advised to reflect on the many meanings of KU which were reviewed in Section One. In somewhat oversimplified terms the main findings are that KU (in the sense of particular uses of information) are associated with approaches that a) provide direct personal forms of intervention, and b) occur over a period of time during which the user makes initial selection, or adoption decisions, and receives

support (in-service training, resources, psychological support) on a continuous basis during the phases of initial implementation, and to eventual incorporation of the information.

Emrick and Peterson (1978) describe these two components in the following words:

> "direct personal intervention is by far the most potent technical support resource, and may be a necessary condition for many forms of utilization". "continuous personal participation of the implementing staff is needed to firmly root and sustain the utilization".

One distinction within this research concerns whether the approach involves individual users, or groups of users. Thus, the Pilot State Dissemination Project (Sieber and Louis, 1972) was based on facilitating use by <u>individual</u> teachers and others as a series of individual users, while the R&D Utilization project (Louis et al, 1979:28) involves programs used by large <u>groups</u>. There is no way at this time of comparing which approach is more effective. In either case, personal contact over a period of time is needed for effective KU of a specific nature.

On the other hand, if we broaden the notion of KU to include diffuse spread and use of information, the answer to what is known about effective approaches is much more problematic. This relates to the recent and rapidly expanding area of research on linkage agents which is the subject of one of the companion papers listed in footnote 1 (Louis, 1980). Just to touch on this research, we might refer to Butler and

Paisley's (1978) conceptual synthesis, and Madey's (1979) empirical follow-up. The former authors suggest that there are three main linkage roles - resource finder, process helper and solution giver - and a more all-encompassing role of generalist. Madey (1979) attempted to verify empirically the nature of linkage roles, and discovered three main roles - resource finder, facilitator, and communicator. The first two were similar to Butler and Paisley's resource finder and process finder; solution giver become incorporated in the facilitator and communicator roles; the generalist and communicator roles were similar. Although there is a substantial amount of research currently going on, there is very little which adequately defines linkage roles, and relates them to different types of KU (again, see the Louis paper for a review of this research). We can say however, that there is a good sense of which approaches to KU are more effective. My interest in the topic of approaches to KU is confined to the role of internal to the district personnel. In other words, I will examine the approaches to KU used by what we might call internal linking agents and users of knowledge.

The Setting.

The term setting incorporates characteristics of individuals and organizational processes which inhibit or support KU in the potential users' situation. A brief overview of those factors can be obtained by considering the roles of

leadership, organizational processes (communication, climate, etc.), individual characteristics, and differences in structural conditions (specifically, elementary versus secondary schools, community characteristics, size especially in terms of district resources and specialists,and teacher unionism).

Leadership.

Emrick and Peterson (1978) reviewed five large scale projects and concluded that "administrators play a crucial role in supporting the utilization process".* In addition to the five major studies included in the Emrick/Peterson synthesis, all other major research indicates that administrative support from the district and school level is positively related to utilization (for example, Rosenblum and Louis' 1979 study of the ten rural districts in the experimental schools project, and Miles et al's (1978) study of the planning and implementation of new schools).

Organizational Processes.

Similarly, virtually all of the above research indicates that peer dialogue and collegiality (frequent meetings, discussion, support) among teachers is positively related to KU. It is interesting to note that this applies to both project related change involving groups of teachers, and to individual

* This factor will be examined in detail in Sections IV and VI. We will find that the specific supportive role by administrators is not so clearly known.

focussed change in which teachers seek or obtain information for their own individual use (although research on the latter is much more scarce). Louis (1978) contains one of the few analyses of organization factors in relation to individual teacher use of information (as distinct from program or project specific use). Louis examined the extent of KU among teachers who had sought information searches (through ERIC) on topics of interest to themselves as individuals. The three strongest relationships were found for variables which were labelled social interaction, namely; 1) the number of different categories of people with whom the information was discussed, 2) the number of different categories to whom the information was loaned, and 3) an index of helpfulness regarding conversation with others (multiple R=.41). It is most interesting to observe that these correlations remained positive when the information was grouped separately for school level, and classroom level problems. Although the correlations were smaller concerning the latter (in the .21 to .33 range), they were positive, indicating that social interaction is important even when the information is to be used solely in one's own classroom. This is not to say that individualistic and school level or district-wide innovations operate in the same manner. Indeed, this distinction is crucial and warrants further research. It is to say that social interaction within the school and external to it (as the "approach" subsection indicated) is crucial for all types of KU. Moreover, in one of

the few, if not only, study to relate teacher to teacher interaction and consultation to achievement outcomes, Armor et al (1976:24) found that the former was strongly related to improved reading scores for black children.

Individual Characteristics.

Research on individual characteristics associated with KU remains ad hoc and inconsistent. There is some consistent evidence that level of education of teachers (e.g., Master's degree or higher) is positively related to adoption and implementation. Relatively large correlations were found by Daft and Becker (1978), Corwin (1975) and Rosenblum and Louis (1979), (yet Louis, 1978, in another study found no relationship between education and use). However, two aspects of the relationship are not clear. First and foremost, the research is not based on a consistent definition of KU (recall Section One), or one which allows comparisons among different versions of KU. Second, we do not know specifically what links education to use, since there are numerous possibilities which one would have to parcel out (e.g., motivation to seek information, knowledge of information sources, etc.).

The roles of age and experience of teachers are also somewhat mysterious. There is some folklore that beginning teachers are too insecure to innovate (i.e., they seek conformity), and very experienced teachers do not want to change their ways, or know enough not to try. The Rand research found that teacher experience was negatively related to

implementation (Berman and McLauglin, 1977). Louis (1978) reported a negative relationship between age and KU. As with education, however, the correlations are relatively small (put another way, many older teachers use KU, and many younger ones do not), and the specific function of age in interaction with other variables is unknown. Other ad hoc individual characteristics have also been found to be related to various measures of KU. The Rand Change Agent study found that teachers who had a high sense of efficacy or control were much more likely to implement change (Berman and McLauglin, 1977:136) as did another Rand study of reading programs (Armor et al, 1976:24). "Motivation to innovate" was one variable which was positively correlated with KU in the Louis' (1978) analysis. In addition to their ad hoc nature, we have no idea from this research about what causes these factors in the first place.

Structural Conditions.

The main factors which should be noted for future sections, and future research concern level of schooling, type of community, size of district and associated factors, and teacher unionism.

There is no adequate body of research on comparing the KU behaviour of elementary and secondary school teachers. Some studies have shown that elementary schools are more likely to adopt and implement changes (e.g., Berman and Paisley, 1975:53;

Emrick and Peterson, 1978). Havelock and Havelock (1973) also found that school districts were much more likely to report innovations directed at the elementary than junior and senior high school levels. On the other hand, Rosenblum and Louis (1979:181) found a positive relationship between level of schooling and implementation, and report that secondary schools attempted more comprehensive changes. Daft and Becker (1978) examined only high schools and reported a great deal of teacher initiated change. We need research which compares the extent of KU across school levels, but more importantly, we need research which compares and describes the nature of organizational processes related to KU at the elementary, junior and senior levels.

Community characteristics represent another set of potentially important factors.* Again, there is limited research on KU in rural versus suburban vs urban settings. House (1974: Chapter 2) shows that populated centers have much more access to information sources than do rural areas and that innovation does in fact spread more rapidly to these

*In this review, I do not examine the role of school communities. They usually do not function as "agents" of KU, but they can put pressure on schools "to do something" about a problem. They can also be instrumental in providing support or opposition for particular innovative efforts. See Berman et al, 1979, Armor et al 1976, and Miles et al 1978 for excellent descriptions and analyses of the roles of individual communities in relation to change programs.

centers than to rural areas. Rosenblum and Louis (1979) did research directly on rural districts (but not comparatively) and found a variety of innovative behaviour which was explained by factors already reviewed (role of superintendent, principal, collegiality, etc.). Community supportiveness, activeness, stability of environment are other factors which may interact with rural-urban differences in relation to KU. The size of district, including resources (e.g., number of district specialists) also interacts with type of community. I leave further specification of needed research in this area until Section Seven.

Teacher unionism and conditions of collective bargaining contracts represent another important, but unknown set of factors which has come on the scene during the past five years, and will be coming increasingly more important.* Because of the recency of this phenomena, not much research has been done on it. Miles et al (1978:11) in the case study of one of their schools comment about the contract: "principals may not be able to choose teachers, but must accept ones with seniority, regardless of their interest in innovation; extra or after-school meetings are forbidden". Havelock and Havelock (1973) in their 1970-71 survey found

*As one indicator thatthis area is still not recognized, there was only one session on collective bargaining at the 1980 AERA meeting and none of the papers related even remotely to program change, innovation, KU, etc.

that "disruptions" (teacher strikes, community protests, student demonstrations) were more likely to occur in large districts (over 80,000 students). They also found that these disruptions had a negative influence on innovation use (as perceived by the superintendent) - 29% of smaller districts, and 57% of larger districts which had experienced disruptions reported a negative influence. This research is not a commentary on teachers per se, but raises the possibility that school boards and teachers are negotiating from adversarial positions which directly (e.g., meetings being prohibited) or indirectly (polarization and bad morale) could affect KU. Collective bargaining as a factor in KU is an area of research which must be examined much more closely than it has been.

Another related contextual condition which is receiving more attention very recently, but which is not usually recognized (expect by those in programs) pertains to turnover of key personnel, and other individual users. In preliminary findings from the U&D Utilization project, Louis (1980) states flatly:

> "Administrative turnover, more than any other single factor, accounts for changes in levels of implementation and institutionalization. Few new principals are committed to the priorities of their predecessors".

The same applies to the cumulative effect of teacher turnover. These rates vary school to school and district to district. Obviously, turnover rates of 30 or 40% over a three or four year period in a given setting could have a

massive effect on the extent of KU in relation to innovation.

In summary, one major underdeveloped area of research on KU which should be tagged concerns the role of "unanticipated critical events" to use Louis' phrase. Such events - leader turnover, teacher turnover, strikes, budget cuts, and other disruptions - can be normal fare over any three or four year period. Their variance and impact on KU should be investigated systematically.

Section Two has contained a general pass through the causes of KU research. My intention has been to provide a sense of the range and types of factors at work, rather than a conclusive review of findings. The research referred to should provide a valuable context for the next four sections, which examine specific categories of people at the district level - teachers, principals, district specialists, district administrators.

III. TEACHERS

Teachers are at the focal point of KU for school improvement because of their direct and sustained contact with students. In order to understand the various roles of teachers in KU, I consider three different roles; 1) teachers as direct individual users of KU, 2) teachers as direct users in planned change efforts, and 3, teachers as agents of KU. The first two forms involve teachers as recipients or participants in KU, while the third form examines their initiating role in

school or district innovation.

Teachers as Individual Users.

Teachers can be direct users of knowledge either as individuals going about their daily, weekly or yearly work, or as part of a planned change effort. The former is examined first.

We have very little positive evidence and some negative evidence that teachers are not heavy individual users of either research knowledge or practitioner knowledge. House (1974, Chapter 4) discussed the teachers' predicament in this regard. Unlike central office personnel, teachers have limited access and personal contact to external sources of information. As House states, "their heavy teaching load confines them to the classroom, which greatly restricts access to new ideas and innovations". It is also well-known that R&D has limited impact on practice of teachers, partly because it is conducted in isolation from teachers, and partly because teachers do not have the time or motivation to assimilate it (see McLean, 1979 for a discussion of "the chastening of educational research"). Not only do teachers engage in limited use of external research ideas, but there also seems to be infrequent use of practitioner generated knowledge. Two main reasons stand out as accounting for this situation. First, the quality and amount of technical knowledge appropriate for use is underdeveloped whether we refer to technical

knowledge from research (which is frequently too abstract, unclear and impractical) or from practice (which is underdeveloped and unsystematized). Lortie's (1975) study of the teacher most clearly documents the lack of a language and culture among teachers to systematize their technical knowledge. The second and related reason is that teachers do not interact with each other on any basis which would lead to shared KU. Lortie (1975), House (1974) and Sarason (1971) all point to the segmented and isolated role of the teacher vis-a-vis other adults, and to the lack of any regular mechanisms for sharing knowledge whether it be research or practitioner based. Thus, there are organizational (structure, lack of time) and cultural (professional isolationalism) barriers which limit the amount of KU behaviour among teachers and between teachers and outsiders. There are no doubt many subtle, ad hoc influences that teachers have on each other, but these are rarely documented, and taken together may not meet the definition of socially validated knowledge.

Leithwood et al's (1978) study of curriculum decision-making by teachers in three school districts in Ontario, Canada corroborates the above findings. These authors found that the predominant pattern of teacher decision-making in planning, developing, implementing and evaluating curriculum was based on individual teacher preference and experience, and individual teacher perception of student needs and reactions. They found some influences through peer

dialogue and administrative suggestions on some aspects of planning and evaluation and minimal influences by agents external to the school. In brief, their study confirms that by and large teachers make decisions on their own with limited interaction/influence from other teachers, administrators or external resource personnel.

Additional research on teacher choice helps to explain why teachers do not seek more external information. Leithwood et al (1978) and Lortie (1975) show that teachers are likely to judge ideas and practices in terms of how they might meet their students' needs and interests. Loucks and Hall's (1979) work on stages of concern of teachers indicates that personal concerns (how will the innovation affect me) are quite high at the early stages of considering a new idea, and must be addressed before impact concerns (how will it benefit students) are fully entertained. These seemingly inconsistent findings can be explained when the two issues are examined together. For example, House (1974) observes that: a) most educational innovations have to be accepted on faith rather than demonstrable benefit, while at the same time, b) the personal costs to teachers (time, energy, skill development, anxiety, uncertainty of benefit) of most changes are high. Thus, the conditions for individual use suffer from the double problem of low demonstrability or specificity of benefit, and high personal costs.

Having said this, I should also note that research on teachers may be missing the many and varied ways in which teacher thinking of KU is influenced. The diffuse and/or longer term impact of educational knowledge which teachers pick up through workshops, readings, casual discussion, etc. is very difficult to identify. Teachers are certainly exposed to a great deal of information. Hood and Blackwell (1976) asked a sample of 202 teachers how frequently they used eighteen sources of information listed by the authors (a three point scale was used: 1=often, 2-sometimes, 3=rarely). There were four sources listed which had means of less than 1.50, namely: textbooks (1.31), personal notes and files (1.45), face-to-face discussion within the school (1.46), and curriculum materials (1.46). Three comments are in order. First, the findings support other research which emphasizes that teachers rely on personal sources. Second, the emphasis on face-to-face discussion within the school may indicate that more KU exchanges occur than is commonly known.* Or, at the least, we can say that when KU does occur, fellow teachers are one of, if not the most, important source of information (see the section below on teachers as agents of KU). Third, the emphasis on textbooks and curriculum materials points to another unknown area of KU. There is some evidence that

*The small sample and three part rating scale using general categories (often, sometimes, etc.) do not warrant confident interpretation as to the strength and meaning of the data.

textbook publishers and salespeople are major disseminators of curriculum knowledge. Boyd (1978) describes the policy-making role which publishers sometimes play. Clark and Yinger (1980:19) in a small scale intensive study of teacher planning found that "the most frequently mentioned resources used in teacher planning were teacher's guides, teacher's editions of student textbooks, and student texts themselves".* In any case, the role of textbook publishers and personnel appears to be an extremely important, but understudied aspect of teacher KU.

In fact, however, we know very little about the daily KU behaviour of teachers. Clark and Yinger's (1980) work indicates that much more goes on in teacher planning than is normally known, and that further research on information sources used by teachers during planning is needed. Clark and Yinger's findings include 1) planning is plural, important and largely invisible to others, 2) planning is not linear or step by step, 3) teachers transform curriculum materials at their disposal during planning and instruction, 4) teachers infrequently reflect on their own planning and information use, but when they do (as when a project stimulates them to do so), they find it revealing and learn a great deal (see also Olson, 1980 for an identical finding). Thus, neither teachers nor

* I cite a similar finding in Section IV on principals use of textbook salespeople (Ruff and Orlich, 1974).

others really know or reflect much about how they use information or make decisions* - another area of research in which further work would be well worthwhile (including the need to compare elementary and secondary school teachers).

Teachers as Users in Planned Change Efforts.

Planned changed efforts have ranged from attempting to stimulate individual KU (Sieber and Louis, 1972) to project focussed changes in which groups of potential users opt into or are forced into particular innovations selected for the school or district (e.g., Berman and McLauglin, 1977; Louis, 1979). From Section Two, we know that teacher KU does occur under the right conditions. Without repeating the details, KU among teachers occurs when: a) the information is of a certain character (relevant to needs, specific in an action implication sense, perceived to be valid/accurate), b) the approach is person intensive, interactive and continuous in providing technical and psychological support and c) the setting (district, school) possesses characteristics of administrative support, peer interaction, and problem-solving behaviour. All three sets of factors must be present if any widespread KU is to occur - apparently, something which infrequently happens.

*Weiss (1980) has referred to this process among policy-makers as "knowledge creep and decision accretion".

Teachers as Agents of Change.

One of the most complicated questions concerns the extent to which teachers act as initiators or advocates of change, thereby affecting policy and KU behaviour in the district or schools in which they work. Teachers as agents of reform, rather than or in addition to being individual users is of direct interest to this review. Leaving aside for the moment, the role of teachers in advocating particular changes, we have already seen that teachers are agents of KU insofar as they discuss, support, provide help, etc. to fellow teachers. Supporting this finding is conclusive research in which teachers cite fellow teachers as the most important source of help. Typical of this research is Aoki et al's (1977) study of social science teachers in their use of province-wide curriculum guidelines in British Columbia. Teacher opinion of the helpfulness of various groups showed that fellow teachers were rated highest (4.03 on a 5 point scale), while district staff were rated as moderately useful (2.94), and department of education, teacher union and university consultants were rated low (1.56 to 2.54). Kormos and Enns (1979) confirm that 'other teachers' are the most preferred source of help. None of this is to say that district consultants and other external technical support is unimportant (see Section Five), but it does say that teacher peers are extremely important for KU in a positive (when interaction and helpfulness is established) or negative (when isolation is the pattern) direction.

There is a great deal of other research which demonstrates that peer interaction and support among teachers is related to implementation including Armor et al's (1976) finding that improved reading achievement was strongly correlated with the degree to which teachers consulted with other teachers.

In sum, without interactive support among teachers, significant KU is unlikely. Perhaps the best way of summarizing the research is to say that teachers do not frequently interact on professional instructional matters, but when they do, it can be very powerful in affecting KU.

Teachers as advocates or initiators of KU is another story. Daft and Becker (1978) examined the adoption of innovations in 13 high school districts introduced during the 1968-72 period. They report a surprising proportion of teacher proposed innovations summarized in the following table:

PERCENTAGE INNOVATIONS PROPOSED BY TEACHERS

1968-72	Percentage
All innovations	69
Innovations that benefit college bound students	83
Innovations that benefit terminal students	55
Curriculum and teaching techniques	87
All other innovations (administrative, etc.)	26

Similarly, Havelock and Havelock's (1973) national survey of innovations (as reported by superintendents) found that teachers (38%) in districts with less than 80,000 students, were the most frequently cited group as having played "a key role" in initiating or sponsoring the innovation. In larger districts (more than 80,000 students) teachers were still cited in 36% of the case, but other staff (district specialists), community and other administrators were identified as frequently as teachers. Somewhat contrary findings are reported by Rosenblum and Louis who discovered that superintendent's authority was associated with more comprehensive or district-wide change, and that teacher autonomy was negatively related to the implementation of such change. House (1974) also suggests that teachers are less likely to advocate changes .

Barrows (1980) investigated the adoption activities of 13 schools which had opted into IGE (Individually Guided Education). Remarkably, she found only two schools in which the teachers and principal were the initiatint force (indeed in only these two schools did teachers even participate in the decision to adopt after the innovation was proposed). The central district office (usually the Superintendent) was the initiator of the innovation in 11 of the 13 cases, and was the sole initiator and decision-maker in 8 of the 11 schools. Unlike Daft and Becker's study, IGE applies to elementary schools. This implies that

secondary school teachers advocate innovations more frequently than elementary school teachers, but the complexities of this whole area of reasearch are evidenced by other findings which indicate that innovation is much more frequent at the elementary level (Havelock and Havelock, 1973; Berman and McLauglin, 1978 and Emrick and Peterson, 1978).

Thus, the KU initiation and use by elementary and secondary school teachers should be compared more directly. It is also worth noting that there is very little research on the KU activities which lead up to adoption or rejection of changes (i.e., on what Berman (1980) calls the process of mobilization). Barrows (1980) is one of the few studies which looked at this aspect, but she did not examine it in any depth. The process leading up to an adoption decision is not described. Similarly, Daft and Becker, 1979 present conclusions on initiation of innovations, but do not indicate what their data base or indicators were, nor do they trace the activities which led up to the adoption decision.

In the meantime, the following tentative observations can be made:

(1) Teachers as a category may be responsible and/or play key roles in many instances of KU, but this does not tell us anything about the average KU instigation of teachers. Indeed, other evidence indicates that the average teacher is not engaged in these efforts. Nor do we know much about the average KU of individual teachers (as distinct from the

initiation of KU).

(2) When teachers do push for change it more likely involves curricular, classroom related innovations. More comprehensive school-wide or district changes come from other sources.

(3) The Daft and Becker and Havelock and Havelock research does not assess "utilization", but only initiation or adoption. Therefore, conclusions about firm KU are unwarranted. Moreover, little is known about the process of mobilization - those activities, events, and KU behaviour which lead up to a decision to adopt an innovation.

(4) Teachers are important sources of support or lack of support for KU of other teachers, whether this be individual or group-based use.

(5) In sum, research is needed on: a) the role of teachers in the processes of mobilization and decision to adopt, b) average KU behaviour of teachers, c) elementary, secondary school differences, and d) the different processes according to variations in rural, suburban, urban, district size and other contextual conditions.

IV. PRINCIPALS AS AGENTS OF KU

After twenty years of meaningless generalities that the principal is the gatekeeper of change, researchers are finally beginning to define and study exactly what the role of the principal is and might be regarding change in schools.

Fortunately, there is some very good detailed research currently ongoing on the role of the principal vis-a-vis change.* While systematic research is not yet available, we do have some good beginnings. I review this work in three parts - 1) large scale surveys on the role of the principal, 2) focussed research findings on the role of the principal in facilitating or inhibiting change and KU of teachers, and 3) conclusions about the role of principals as KU's and as agents of KU.

1. Large Scale Surveys

There have been recent national or state surveys of the role of elementary school principals (Pharis and Zakariya, 1979) and secondary school principals (Abramowitz and Tenenbaum, 1978), Byrne et al, 1978 and Gorton and McIntyre 1978) in the United States, and principals from across all levels in the province of Ontario, Canada (Eastabrook and Fullan, 1978). These studies provide a broad context for considering the role of the principal.

In the Pharis and Zakariya (1979:28) study the most frequent "source of ideas for recent innovation" for elementary school principals were 'other principals and teachers' (23%

*To cite just a few researchers who are concentrating on the role of the principal - Gene Hall and Associates, R&D Center, University of Texas, Ken Leithwood, OISE, Dan Lortie, University of Chicago, James Molitor and Karen Louis at Abt. Deal and Rallis (1980:222) point to current commissioned research on the role of the principal and use of research in Teacher Corps projects, and to the work of Dell Hymes on ethnographic monitoring of principals.

named this category in a mutually exclusive rating). However, professional reading (19%) and local workshops (16%) were frequently used by substantial numbers of principals as the percentage indicate. In rating the value of certain types of preparation for the job, 85% named on the job experience as a teacher and principal as having "much value", while only 36% mentioned graduate education, and 24% in-service programs. Since in-service programs for principals are becoming more widespread, some attention must be paid to what constitutes useful and less than useful in-service programs.* (See also Reinhard et al, 1980).

Orlich et al have examined the role of principals in innovation in Washington State. In a survey of 100 school principals concerning the use of social science innovation, Ruff and Orlich (1974:390) found that textbook salesmen were listed by principals as the best source of information (53%), followed by the district curriculum director (40%); no other source was listed by more than (7%). In a later study of social science and science curriculum innovation, Orlich et al 1976 found similar results. For social science, 50% of the principals mentioned commercial publishers as the best source, 43% cited district curriculum coordinators, and 33% mentioned books, journals, etc. Similar results were found regarding

*The same of course, applies to teacher in-service (Fullan, 1979)

science innovations. One further finding directly related to the purpose of the survey was that principals who had attended National Science Foundation workshops (about one half the sample) were much more likely to list workshops as significant sources of ideas for innovation than were non-NSF principals. Thus, focussed workshops can be useful, but are not frequently utilized.

In a study of the senior high school principalship, Byrne et al, 1978:6 found that principals do report a high level of involvement in conferences and workshops - 79% said that they attended workshops and conferences within the district, and 62% outside the district. The relationship to KU is unknown, but one might suspect that the effectiveness of workshops has not been great given what we know about problems of conducting effective in-service (again, see Reinhard et al, 1980 which is reviewed in the next section).

When senior principals were asked to rate how essential certain types of pre-service courses were, it is interesting to compare the 1965 and 1977 findings summarized below:

Course	1977 % Rated Essential	1965 % Rated Essential
School law	77	32
Curriculum and Program Development	76	41
School Management	74	26
Supervision of Instruction	71	56
Human Relations	71	45
Administrative Theory and Practice	32	41

Source: Byrne et al, 1978:10

Two findings are worth highlighting for our purposes. First, the overall amount and range of essential knowledge as seen by principals has increased dramatically (5 of the 6 categories show major increases reflecting what some principals see as the problems of role overload and the need for role clarification in the contemporary principalship. Second, curriculum development, which is closest to our concern with KU for school improvement, shows a major increase from two-fifths of the principals who said it was essential in 1965 to three-quarters in 1977.

Even more interesting is the rank ordering of how principals 'do spend time' compared to how they think they 'should spend time'. Program development was ranked 5 out of 9 tasks in terms of 'do' and 1 out of 9 in terms of 'should'.

In a subsample of the 60 most "effective" principals (identified through reputational criteria), Gorton and McIntyre (1978) found that these so-called effective principals focussed more on program development than the sample as a whole. In time actually spent, program development was ranked 1 of 9 in time spent during the previous two weeks, and 3 of 9 in time spent over the whole year (compared to 5 of 9 for the larger sample). However, teacher perceptions of these principals was different. Teachers indicated an actual rank order of 5, and a should rank order of 1 (we cannot compare this with the larger sample, because teachers

were not sampled). Principal's role in curriculum change varied from school to school:

> "a few principals indicated that they initiate ideas, often subtly through others, but more typically the principals view themselves as catalysts, facilitators, reviewers, and resource providers" (Gorton and McIntyre, 1978:22).

Principals listed teachers, individually or by departments, as the primary initiators of curriculum changes, and themselves as the initiators of or facilitators of major changes in the school. The authors of the study formulate a composite of the change strategy used by the 60 principals:

(1) recognize the need and plant the seed with staff members and/or others; 2) work with people, especially those most affected - but do not impose change; 3) provide needed resources and support" (Gorton and McIntyre, 1978:61). The sample of exemplary principals cited "role clarification" as the number one need, and that excessive paper work and district meetings were a major drain on their time.

The exemplary principals are by definition not representative of principals as a whole. In more general surveys, the prominence of the principal on KU decisions is minimal.* Aoki et al (1977) found that principals were rarely mentioned by a large sample of social studies teachers as "sources of information". Barrows (1980) investigated the adoption

*This is not to say that principals are unimportant. Indeed, their lack of prominence in KU may be one of the main causes of lack of implementation or KU of teachers.

decisions in 13 sites which were using Individually Guided Education. Not only were principals involved in decisions to adopt the innovation in only two of the thirteen cases, there were only three cases in which principals had the "opportunity to confirm the adoption decisions" (i.e., the central office made the decision in 10 of the 13 schools). Havelock and Havelock's (1973) national survey of superintendents also found that principals were rarely mentioned as key factors in innovations adopted.

Generally, similar findings on time spent are reported by Eastabrook and Fullan (1978) in their Ontario sample - 44% of the principals said that they actually spend a great deal of time on curricular tasks, while 76% indicated that they would ideally like to spend a great deal time on such tasks. The percentages were reversed for administrative tasks (paper work, meetings, etc.).

The above findings provide a general context for considering the role of the principal. Among the findings and gaps are the following:

(1) Principals probably are exposed to more ideas than are teachers. However, only a minority find workshops, reading, etc. as valuable. Other principals and teachers are the preferred source, but this too, is in the minority.

(2) Both elementary and secondary principals say that they would like to spend more time on program improvement than they do. The veracity of this statement must be examined, since

this represents a socially desirable response.

(3) The overload of responsibilities in school management, administrative requirements, public relations, etc. interferes with principal involvement in KU, and makes prioritizing of activities difficult.

(4) Effective principals play a direct or facilitative role in KU and school improvement, but it is not at all clear what this means in practice (see the next section).

(5) The general findings do not indicate major differences between elementary and secondary school principals, but surely there are important differences according to size and level of schooling. One would expect that principals in large secondary schools would perform more of an administrative and indirect role, but the study of 60 effective senior high school principals indicated that they actively support curriculum improvement.

Research Findings on the Principal and KU.

Up until 1975 there were very few empirical studies on what the principal does and does not do in relation to educational change (there is still only a small number of studies, although it is increasing rapidly). Wolcott's (1973) ethnography is rich in detail, but is based on a sample of one. Wolcott reports that Ed's (the principal) formal preparation for the role of the principal was "simply a fact of life that he had to take courses" (p. 178), and that his courses were of little or no help to his work.

Similarly, in-service work was done mainly to meet district requirements ("I have been involved in workshops 'up to here'," p. 199). As to KU from research sources, Ed had a number of journals and books on his shelf, but, observes Wolcott "I know of no occasion when Ed so much as glanced toward any of the materials on the shelf" (p. 200). Ironically, research was cited to support certain decisions - Ed often resorted to an answer frequently employed by other principals as well: "I think you will find that studies have shown..." (p. 205). Wolcott, as many others have found, adds that principals and teachers rarely interact on professional matters except to do what is minimally required for teacher evaluation. Sarason (1971) states that many principals handle the dilemma of interacting with teachers by minimizing interaction. Both sides, in effect, agree to leave each other alone.

Wolcott also suggests that principal's work more to manage change introduced from outside than to lead change:

> "Principals talk a great deal about change. But I did not see any evidence that Ed actually contributed to this foment. The school principal is successful in his work to the extent that he is able to contain and constrain the forces of change with which he must contend as a matter of daily routine" (p. 307).

The principal according to Wolcott is interested in maintaining an image of change, but is more prudent in dealing with the real thing. This is reminiscent of Berman, McLauglin et al's (1979) description of "the illusion of change", Argyris and Schon's distinction between espoused

theory and theory in practice, and Miles' description of the principal at Westgate who supported open education in general, but not at a specific level.

In any case, the history of the role of the principal in educational change is not compelling. Sarason states quite baldly:

> "There is little in the nature of the classroom teacher, there is little in the motivation of the teacher to become a principal, there is little in the actual experience of the teacher with principals, and there is even less in the criteria by which a principal is chosen to expect that the role of the principal will be viewed as a vehicle, and in practice used, for educational change and innovation" (p. 115).

Recent empirical evidence confirms that the majority of principals play a limited role in educational change, but also that some principals are effective agents of KU. Crowson and Porter-Gehrie (1980) recently reported findings from an intensive observation study of twenty-six urban school principals. The overwhelming emphasis and pressure in their daily work was toward stability and maintenance, specifically 1) maintaining student disciplinary control, 2) keeping outside influences under control and building external support, 3) keeping staff conflicts at bay, and 4) keeping the school supplied with adequate resources. It is revealing to note that Crowson and Porter-Gehrie's "natural" description of what principals do rarely mentions KU behaviour aside from some aspects of "keeping the school supplied with adequate resources" (even the latter referred primarily to basic

supplies and staff rather than KU).

In a larger scale study directly involving innovative projects, Berman and McLauglin (1978:131) report that one-third of the teachers in their study thought that their principal functioned primarily as an administrator. Teachers rated these principals as ineffective and uninvolved in change. Berman and McLauglin do not say how many of the other two-thirds were actively engaged in change (moreover, their sample was based on school districts which adopted innovative projects). The authors do, however, indicate what successful principals did. They found that "projects having the active support of the principal were the most likely to fare well (Berman and McLauglin, 1977:124, their emphasis). They claim that principal's actions serve to legitimate whether a change is to be taken seriously, and serve to support teachers. They also note that one of the best indicators of active involvement is whether the principal attended workshop sessions with their teachers. Emrick and Peterson's (1978) synthesis of five major studies, and the work of Hall and Loucks at Texas confirm that KU is unlikely to occur in the absence of direct administrative support, especially by principals. Cases of effective involvement by principals are cited, and indicated as in the minority. Loucks and Hall (1979:18) describe an effective elementary school principal who was instrumental in bringing about KU of a new science program:

> "In this school the teachers knew that teaching the science program was a priority, the principal makes certain that new teachers and those at new grade levels receive the necessary training to teach the new units...He constantly visited classrooms, assisted with lessons, and talked about children continually".

Levels of implementation at this school were higher than in other schools where most principals gave at best a general endorsement of the program, and indicated that use of it was up to the teacher. In a more recent paper Hall et al (1980) examined nine schools more closely using a case study methodology. In attempting to understand why teachers in some schools had more concerns about "managing" the science curriculum innovation, while other teachers were concerned about the impact or achievement of students, the schools were classified according to the concerns profiles of teachers as a group. This resulted in three groups - three schools had clear management profiles, four had mixed profiles, and two were characterized by high interest in student achievement resulting from the use of the innovations. The field research concentrated on the behaviour of the principals in these nine schools. In the authors' words:

> "Principals in the Management concerned schools did not get personally involved with teachers and their use of the science innovation. Rather, these principals delegated responsibility or made major decisions with little follow-up on the results. For example, in School 1, the principal assigned the administrative assistant to handle anything related to science, and in School 3, the principal assigned a teacher to handle science materials and never checked to see what happened. The principals in these schools seemed to be more concerned with general issues rather than specifics and left teachers on their own to determine how

> to implement the innovation. The principals in the two Impact Concerned Schools, 8 and 9, were by comparison science activists. They were concerned about supporting and helping teachers in their use of the innovation, so on a weekly and daily basis they were monitoring what teachers were doing with science. They set policy within the school that clearly indicated that science would be taught. They worked on teacher-specific implementation problems. They also served on the district-wide principals committee for science. In addition, these principals were described as having longer term goals and visions for their schools and teachers. There is a dynamic energy about them, a sense of commitment and direction for attaining their goals. (Hall et al, 1980:24)

Hall et al are very explicit about the implications of their results:

> "For us, the single most important hypothesis emanating from these data is that the degree of implementation of the innovation is different in different schools because of the actions and concerns of the principal. At this time it appears that a most important factor to explain the quality and quantity of change in these schools is the concerns of the principals and what the principals did and did not do" (Hall et al, 26, the authors' emphasis).*

It seems, then, that the principal's interest in instruction is of critical importance (at least at the elementary school level). Corroborating this is Wellisch's et al's (1978) in-depth study of twenty-two elementary schools in which they related "principal's leadership in instruction" to "school success in raising reading and math achievement of students".

---

*Hall et al have recently launched a new, more systematic investigation of the role of the principal and change.

The sample was part of a national evaluation of school districts supported through the Emergency School Aid Act (ESAA). Teachers and principals were asked if the principal felt strongly about instruction, had definite ideas, and promoted a point of view (p. 215). They found that "schools where principals felt strongly about instruction were significantly more likely to show gains in achievement" (p. 216).* Owens and Steinhoff (1976:152) describe an identical finding in which two matched urban schools were compared (matched on basic characteristics except that one school consistently out-performed the other in reading achievement tests). The only discernible difference between the two schools was "the leader behaviour of the two principals" in which one principal played a direct role in instructional planning and the other did not.

Reinhard et al (1980) provide a summary of another one of the recent field based studies of the role of the principal in schools which were part of Teacher Corps project. Field researchers conducted interviews with 21 principals, 16 project staff and 42 teachers. The sample included 6 elementary, 4 middle and 4 high schools in rural, suburban and urban settings. Excerpts from the authors' summary best describe helpful and unhelpful behaviours of principals

*Successful achievement was defined in terms of student gains in terms of national percentiles. On a four point scale of principal interest in instruction, principals in successful schools had a median of 2.9 compared to 1.0 in non-successful schools.

in successful and unsuccessful projects:

> "The most successful projects we observed had principals who were intensely involved during the initial stage of the project's life ... It is the principal's efforts and behaviour during this stage (early stages) of the project that most surely affect later successes or failure. Behaviours observed and reported to us across projects varied from intense active involvement on the part of some principals to permitting planners and others to carry out a set of start-up activities and then blocking, resisting or ignoring the project and its mission...
> (The principal's involvement in the implementation stage) was influenced most by the size and complexity of the project...in very small schools in our sample... principals were required, if the project were to proceed, to stay very much involved...in larger schools...the principal normally pulled away from the day-to-day involvement during this stage with few negative consequences. A pattern observed in successful projects was for the principal to remain interested and ready to problem-solve around obstacles that the project might encounter...(at the institutionalization stage) in almost every instance in which we studied a project that was near the end of its life or had ended, the principal decided what was to remain" (pp. 8-9).

In a series of other comments reflecting facilitative behaviour of principals, Reinhard et al state:

> "the principal encouraged faculty participation in providing direction for the project, the principal explained to regular faculty how the project benefits them, the principal encouraged participation in in-service events, the principal facilitated staff visits to other schools, the principal selected unit leaders and helped them develop as a team...The principal anticipated materials and equipment needs and had them on hand, the principal shortened the school day twice a month and used the time for planning, the principal found non-project funds for teachers to visit other schools" (pp.12-13).

Despite the appearance of many commonalities in the above studies (see also Lipham 1980), we still know very little about the proportion of principals who may be engaged in KU efforts. Even more problematic is the lack of conceptualization and specification of different roles played by different principals within the domain of change. Stated another way, different change directed behaviours may be more or less effective either in their own right, or under different conditions. These issues are addressed in the rest of this section.

Variations in the roles of principals have been examined by several other researchers. Hyde (1977) analyzed the problem-solving methods of nine principals in the Documentation and Technical Assistance project. Seven of the nine principals "managed" their problems in essentially an administrative manner (bureaucratic paperwork, announcements, etc.), four placed a major emphasis on educational interaction (curriculum, teaching, etc.), and four worked as coordinating managers (coordinating assistant principals, department chairpersons, etc.).* We can note for future reference that three of the four principals with educational interaction approaches were elementary school principals, and three of the four coordinating managers were at the high school level. Administrative preoccupation occurred equally at both levels.

*The three categories were not mutually exclusive. It was possible to operate simultaneously in more than one mode as long as a major emphasis was placed on the mode (no principals showed more than two modes).

Leithwood et al (1978) observed and interviewed 27 principals from three school districts. They discovered four types of leaders - administrative (50%), facilitative (31%), directive (12%) and interpersonally oriented (8%). In other words, when it came to curriculum change, one-half the sample operated basically as administrators. In the words of the authors:

> "The administrative leader is essentially a passive observer of the curriculum process in his school. He keeps track of what is going on and may make suggestions on an infrequent basis, he becomes directly involved only if there is a visible problem" Leithwood et al, 1978:66).

Equally interesting is the distinction between facilitative and directive leaders, because both play an instructional change leadership role. The facilitative leaders were "highly involved in the curriculum decisions of teachers" (p. 70). They used a variety of strategies to organize and influence teachers. They established priorities, but "relied heavily upon teachers to influence other teachers" (p. 71). By contrast, the more directive leaders decided themselves on the nature of change, and attempted to get their teachers to follow their decisions. The distinction is important, because research on the principal which lumps together all principals who are involved in change may result in misleading or inconsistent findings. For example, in Miles (1978) case study of two open space schools, one principal actively intervened in the implementation process, while

the other didn't (p. 113, 127). As it turned out, it was the non-active principal who had the most influence on later implementation. This seems puzzling until we realize that it is the quality of activity and its relationship to the whole set of factors we have been discussing. Other data in the Miles' study show that the active principal did not understand and was not committed to open education. Secondly, he was not seen as supportive. The principal who was less active about implementation was more directly supportive of teachers (Miles, 1978:204). The teachers in the latter school put in more of an effort, and reported behaviour that was much more consistent with open education. A doctoral dissertation on the same project elaborated on these findings (Galanter, 1978). In the one school (the principal who did not directly intervene in implementation), Galanter found the principal's support affected the climate of 'help giving' by teachers, and perceptions of 'help received', with the latter (help received) being directly related to better program implementation (Galanter, 1978). The principal contributed indirectly through his influence on the climate of support which teachers gave each other. In the second school, Galanter discovered that principal's support for the innovation was <u>negatively</u> related to implementation. This was the school where the principal supported the change, but did not understand it. Not understanding it, he could not give direct or indirect (e.g., by obtaining resources) <u>specific implementation support</u>. Yet on the surface this principal could be classified as playing a direct instruction role.

Thus, active involvement and support of the principal is important for KU, but not in the form of direct imposition or naive endorsement of change. More generally, the complexities of the meaning of principal support for an innovation are considerable. We need more research which describes the different change roles played by principales because there are conflicting findings about how directive principals are or should be in change efforts and with what consequences.*

It is no theoretical and empirical accident, one would hope, that Margaret Thomas (1978) identified essentially the same three roles as did Leithwood et al in her study of principals in the alternative school programs in Alum Rock, California; Minneapolis, Minnesota; Cincinnati, Ohio; and Eugene, Oregon. Thomas describes the three roles:

> "The Director - this principal makes the decisions in his school, both procedural and substantive. He will take a great interest in things affecting the classroom, such as curriculum, teaching techniques, and staff development and training, as well as those things affecting the school as a whole, such as scheduling and budgeting. Teachers in a school with this type of principal contribute to decisions affecting the classroom, but the principal retains final decision-making authority.
>
> The Administrator - this principal tends to separate procedural decisions from substantive decisions. He will give teachers a large measure of autonomy in their own classrooms--over what they teach and how they teach--but will tend to make the decisions in areas that affect the school

*There are two facets of this problematique. One involves obtaining a clearer distinction between directive and facilitative. The other involves identifying the conditions under which one may be more effective than the other.

as a whole. He will perceive his functions as distinct from those of his faculty, and will tend to identify with district management rather than with his staff.

Facilitator - this principal perceives his role as one of support; his primary function will be to assist teachers in the performance of their duties. Unlike the administrator, however, this principal will be more concerned with process than with procedures. Principals who exhibit this type of behaviour often perceive themselves as colleagues of their faculty, and are most apt to involve their teachers in the decision-making process. (pp.12-13)

We cannot entertain a detailed analysis of the four school districts, but the aggregate figures can be reported for the total 68 schools across the four districts.

Perceived Principal Behaviour Type	N	%
Director	18	26.5
Administrator	33	48.5
Facilitator	17	25.0
	68	100.0

(compiled from Thomas, 1978)

Again, this is not a representative sample, and Thomas' definition of director is perhaps more comprehensive than Leithwood's. In any case, the percentage of administratively oriented principals (as perceived by teachers) is virtually the same in the two studies - half the sample.

The relationship between principal behaviour and implementation of programs confirms what we know about administratively oriented principals, but the other two behaviour types are more complex. Regarding the former for example,

in Minneapolis "the five schools where either a majority of the teachers did not follow the same classroom practices, or where the teachers were following classroom practices not consistent with their program label, were headed by principals who behaved primarily as administrators" (Thomas, 1978:60). Conversely, the schools headed by directive and facilitative principals were consistent with their program labels and different from other schools in the system (that is, they implemented alternative programs as they had set out to do).

Analyzing the impact of directive and facilitative principals requires knowledge of different contextual conditions (lending support to Berman's 1980 claim that we need to know the particular combination of situationally specific variables in order to understand or plan for effective change). Thus:

> "In Minneapolis, separate-site alternative program principals and some of their staff frequently received training in the program's philosophy and design before or concurrent with implementation of the program. In this context we found that principals who behaved as directors were just as effective at achieving program distinctiveness as were the "facilitator" principals who involved their teachers in decision-making" (Thomas, 1978: 86).

It seemed that program leadership (a discernible leader responsible for the program's design and implementation) was essential, but this could be provided by the principal (as director) if "he is both willing to assume the responsibility and in agreement with the program's educational

philosophy" or by the teacher or teachers if the principal (as facilitator) is willing to give them decision-making responsibility and active support (Thomas, 1978:87).

In attempting to describe the nature of different change related roles of principals, we are helped in a perverse way (the problem becomes more complex) by Blumberg and Greenfield's (1980) study of the effective principal. The authors sought out recommendations of the most effective principal, and selected eight principals to represent diversity (elementary/secondary, rural/urban, male/female). All eight principals were very effective in their schools, but were quite different in their predominant approaches to their work. Blumberg and Greenfield describe the eight principals with eight different labels - the problem solver, the value-based juggler, the authentic helper, the broker, the humanist, the catalyst, the rationalist, and the politician. There were some common basic elements to their approaches. Blumberg and Greenfield describe three - vision, initiative and resources:

> "Their individual commitment to the realization of a particular educational or organizational vision;
>
> Their propensity to assume the initiative and to take a proactive stance to the demands of their work environment;
>
> their ability to satisfy the routine organizational maintenance demands in a manner that permits them to spend most of their on-the-job time in activities directly related to the realization of their personal vision. They do not allow themselves to become consumed by second-order priorities" (Blumberg and Greenfield, 1980:208).

The latter comment is particularly revealing in light of the frequent finding that many principals are preoccupied with

administrative details and routine.

The eight principals could not articulate conceptually what they did, but Blumberg and Greenfield summarize the principals' orientation to KU:

> "all of them were very skilled at analyzing and determining the requirements of their school situations, and indicating alternative courses of action. This was,like their disposition to collect information as they moved through their work world, a continuous process. They were constantly sorting, sifting, categorizing, and interrelating phenomena bearing on the principalship" (p. 257).

A further relevant finding was the almost complete absence of interaction with fellow principals despite the desire to do so (Blumberg and Greenfield, 1980:168), nor was there a great deal of interaction with superiors. The words Blumberg and Greenfield most frequently use to describe the relationship of principals to those outside their school is isolation and loneliness.

Perhaps, most significant to KU is the finding that at the time of writing the results, seven of the eight principals had either left their positions or were planning to leave (either to promotion or alternative lines of work). Lipham (1980), p. 212) also found that the departure of the principal was the most important reason "for a school's abandoning an educational innovation" (p. 85). Echoes of Louis's (1980) recent findings in R&D Utilization Project.

Conclusions About the Role of the Principal in KU.

As before, there is a mess of variables which must be sorted out before we can understand the apparent inconsistencies and details of the KU behaviour of principals. We might best summarize the research in three parts - what do we know about principals as users of knowledge, what do we know about them as agents of KU for teachers, and what are the most important research gaps we should identify.

Principals as Knowledge Users

Principals on a per capita basis have more opportunity and access to external sources of knowledge than do teachers. The majority of principals however, do not seem to take advantage of, or the situation does not support them to investigate these sources of information. The most effective principals (by reputation) do draw more extensively on external sources, and name curriculum or instruction as a higher priority. Blumberg and Greenfield also point to the enormous amount of information processing of the internal to the school environment which effective principals carry out. Needed research arising from these observations is listed below.

Principals as Agents of KU

Research consistently found that a large percentage of principals (at least one-half) were preoccupied with administrative work, and organizational maintenance activities.

Of the other principals, the exact role in KU was somewhat ambiguous and variable. There was some evidence that direct leadership in instruction was strongly related to KU (e.g. Wellisch et al, 1978), but other evidence that it may be dysfunctional (e.g., Leithwood et al, 1978). By contrast, facilitative leadership by principals was found to be effective (e.g., Leithwood et al, 1978). These are not necessarily incompatible findings. There are at least three aspects of the problem which need to be clarified. First, we need more operational definitions of directive and facilitative modes. It is likely that different components and meanings are currently being included. For example, directive can range from having a clear instructional image to authoritarian imposition of poorly thought out or centrally directed programs. Facilitative can range from laissez-faire relationship to teachers to one of active support. Second, it is possible (and there was some evidence to support this) that effective elementary school principals play a more direct instructional role and secondary school principals carry out a more indirect role. Third, returning to the multidimensional nature of KU, it may be that centrally derived programs are more effectively used by directive principals (when they agree with the program), and individualistic KU is better served by facilitative principals. Despite these variations the research reviewed was clear that some form of active involvement and support by the principal

was essential for KU by teachers. Furthermore, these principals had been effective at coping with (delegating, re-prioritizing, etc.) administrative processes, which preoccupied their colleagues.

Finally, the research was in agreement that the principal in a positive or negative way is critical - in fact, may be the most critical agent - for KU of teachers.

Research Gaps

Given that the principal is so important for KU, the research gaps in our knowledge are especially noteworthy.

(1) We need research which examines the daily KU behaviour (according to our multiple definition) of principals. This research should incorporate internal to the school relationships vis-a-vis KU, external to the school relationships vis-a-vis KU, formal and informal KU, innovation focussed and individual focussed KU.

(2) We need conceptualization and research on the meaning and main roles of principals (administrative, directive, facilitative, etc.) in relation to KU, including how some principals are able to prioritize or otherwise operate more effectively as KU agents. Research on effective forms of in-service training of principals as managers of change and KU is especially needed (see Reinhard et al, 1980, and Blumberg and Greenfield, 1980, Chapter 16).

(3) We need research which examines different conditions under which principals work and the consequences for the role

of principals in KU - elementary/secondary differences, rural/urban, school size, centralized/decentralized school districts all should be differentiated in carrying out the research referred to in (1) and (2).

This has been a very lengthy section, partly in recognition of the central importance of the principal in KU, and partly because there is a good deal of current research which is worth reporting. The next five years promises to be even more fruitful for describing, understanding and planning for more direct and effective KU roles of principals.

V. DISTRICT SPECIALISTS/CONSULTANTS

There has been a great deal of attention on external linking agents in research over the past five years, but not much research on internal consultant/district specialists. Internal agents are probably more critical for KU than external consultants* because of the necessity of continuous, personal interaction. So the neglect of examining the role of internal district consultants is a serious one. The lack of specific research prevents us from being able to describe the role of internal agents. The evidence we do have indi-

*External agents have been effective when they have worked intensively with teachers (Sieber et al, 1972; Emrick 1977; Stallings 1979; Berman and McLauglin 1977), but in general, external agents are probably more instrumental for adoption than utilization (see Lippitt, 1979 and Rosenblum and Louis, 1979 for discussions about the limitations of external consultants in the rural experimental schools project).

cates that district consultants are not particularly effective, but that they can be, depending on how they are organized and carry out their work.

Leithwood et al (1978) report that district resource staff ranked 18th on a list of factors that influence curriculum decisions of teachers (as reported by teachers). The authors also state that resource staff spend a substantial amount of time in direct verbal communication with teachers on an individual basis and in workshop groups. Leithwood rightly points out, as the in-service research literature shows (see Fullan, 1979) that little is known about the impact of these efforts. Leithwood et al did find that "utilizing peer dialogue to influence teachers' choice of objectives is an important strategy notably lacking among the resource teachers sampled in this study" (p. 74).

A study of school district consultants by Regan and Winter (1980) in Ontario (N=630) is one of the few large scale surveys available of what district consultants do. Unfortunately, the study does not link consultant activity to KU by teachers, but the results are still instructive. Twenty-eight tasks were identified by the researchers. Of the highest ranked task (in terms of time spent) only two (in-service workshops and explaining curriculum guidelines) involved group activities directed at the dissemination of knowledge. Most of the high ranked activities involved one to one interaction. As the authors observe:

> "When consultants deliver materials to teachers and counsel them about classroom program, the interaction is one to one with consultants providing much individualized and personal assistance to the teachers involved. As a means of influencing teacher decisions, however, these tasks, by their very nature, limit the number of teachers whose needs/requests can be accommodated" (Regan and Winter, 1980:11-12).

The issues are complicated, however, because it is not clear whether the group work is effective. For example, we know that many in-service workshops are considered by teachers to be a waste of time. At this stage all we can do is raise the question that we need to examine more closely how district consultants spend their time and with what consequences .Of particular interest are models which combine group work and individualized follow through (for one such example, see Pratt et al, 1980).

A second major finding of the Regan and Winter research was that district consultants "have had no other training/ experience preparing them for consulting" other than basic teacher training and classroom teaching experience. Given the complexities of facilitating KU with large groups of teachers this would appear to be an extremely fruitful area for further research, development and assessment of possible training approaches and activities.

Kormos and Enns (1979) in a study of 500 teachers in 90 school boards in Ontario found that 'other teachers' was the most preferred source of help, and that school district curriculum consultants were also highly valued. External

consultants (Department of Education staff, university consultants, etc.) were considered to be not at all helpful (Leithwood also found this to be the case).

Several other studies found that district staff were the most or second most useful source of information. Aoki et al (1977) carried out a province-wide study of social science teachers in British Columbia. Teacher opinion of the helpfulness of various groups showed that fellow teachers were rated highest (4.03 on a 5 point scale), and that district staff were rated as moderately useful (mean 2.94), (department of education, teacher union, and university consultants were rated relatively low (means .156 to 2.54).

In their national survey of school superintendents, Havelock and Havelock (1973) report substantial use of internal district resources in the support of important innovations (and less use of external resources). In districts with less than 80,000 students, curriculum supervisors (32%) and district Research and Evaluation staff (32%) were used by one-third of the sample each (only teachers and in-service training were used more, 47 and 43% respectively). In larger districts - above 80,000 - curriculum supervisors and R&E staff were used by the majority of cases and as extensively as any other category (61% each for supervisor, R&E staff and in-service and 55% for teachers). It will also be recalled that Orlich et al (1976) found that district curriculum coordinators were the second most identified group of sources for innovation for principals.

The Rand Change Agent Study provides confirmation that

local resource personnel are essential for implementation and continuation of changes. McLaughlin and Marsh (1978) contend that even a carefully planned staff training program cannot anticipate the nature, timing or individual needs of in-service assistance, as they relate to classroom problems. On-line assistance by local resource personnel or consultants was necessary. They also point out that the amount of assistance is less important than the quality: "good consultants helped by providing concrete practical advice to project teachers...ineffective consultants often furnished advice that was too abstract to be useful". They add that specific skill training while necessary, is not sufficient for conceptual clarity regarding complex new ideas:

> "conceptual clarity may be fostered - but cannot be assured - by specific project goal statement or by the use of packaged materials or by lectures from outside consultants. The conceptual clarity critical to project success and continuation must be achieved during the process of implementation" (McLaughlin and Marsh, 1978:80).

The problem, however, is that internal agents (or anyone else for that matter) do not know how to set up a process of continuous interaction with teachers. Lippitt (1979) sums up this aspect of the Experimental Schools (ES) project in rural districts"

> "just as the projects lack clarity in role definition for ES/Washington and its external consultants, so there is a lack of clarity in the roles of the internal agents. Staff members who were assigned to coordinate, facilitate, train or support were almost always carrying a combination of supervisory, administrative, monitoring and consultative duties. Overlapping respon-

> sibilities made it difficult to gain trust or credibility or legitimacy as a consultative helper and supporter" (Lippitt, 1979:262).

Miles et al (1978) in investigating the planning and implementation of new schools report two main findings pertinent to this discussion. First, district and school administrators steadfastly refused to take advantage of matching funds from the project to bring in external consultant help on the grounds that "district resource staff could provide all the help that was needed". Second, district resource staff were not in fact used to provide continuous (or in many cases) any ongoing help for teachers struggling with implementing new ideas.

Where district staff have been effective, it has been where districts set up a deliberate, organized system of local support. For example, the use of internal district personnel (in combination with external resources) is particularly well described and documented in the Jefferson County district wide elementary science curriculum innovation (Pratt et al, 1980; Hall et al, 1980; Loucks and Melle, 1980).

Daft and Becker's (1978) study is one of the few which has highlighted the possible critical role of district support staff:

> "The presence of a special group playing a coordinating role in the high school districts seems to make a real and positive difference to the number of innovations adopted" (p. 155).

They proceed to explain why district support staff were so important:

> "The coordinators arranged frequent meetings with small groups of teachers and department heads to exchange ideas and information. The coordinators also did the research work and proposal preparation for ideas the teachers wanted approved by the district superintendent and school board. Coordinators seldom proposed their own ideas for adoption. Coordinators also did extensive research work and proposal preparation for top administrators, thereby facilitating the trickle-down of administrative changes as well". (p. 156).

Berman, McLaughlin et al (1979) elaborate on the importance of school district "infrastructure for change" which they describe in one school district which reflected the most advanced state of development:

> "Their (district curriculum specialists) primary tasks are to assist teachers and principals by providing pedagogic leadership, being on call to deal with special problems, and stimulating grass roots innovation. Specialists are expected to keep abreast of the latest research and theory developments and to share these developments with Sandwood staff. The assistant superintendent for the Programs Division summed up the role of the specialists in the following way:
>
> "We expect them to be in tune with national developments; they're supposed to stir things up. This whole operation is geared toward destroying the status quo and the specialists are critical to this effort". (Berman, McLaughlin et al, 1979:53).

Fullan, Miles and Taylor's (1978) case study of Adam's County confirms the importance of the establishment of a resource unit within the district which is integrated with on-going program needs. External consultants are used, but

mainly to train inside resource people (i.e.,as trainer of trainers). The resource system is clearly under the control of the district.

Organized and coordinated district efforts, however, seem to be the exception rather than the rule. Howey and Joyce (1979) in the U.S. and Nash and Ireland (1979) in Canada both found that there was a distinct lack of planning, coordination, job focus, and use of knowledge and principles of program planning and implementation in district in-service programs. For example, Nash and Ireland found only three cases out of forty districts in which there was any relationship between stated curriculum priorities and in-service programs for curriculum implementation, and found only two school systems which had a planned sequence at the district, and school levels to facilitate the use of a selected curriculum change. Even more revealing is Lyon et al's (1978) comprehensive survey of the 750 districts in the U.S. having 10,000 students or more. Among their findings: 1) only 43% of the districts have a central office for program evaluation, 2) 50% of the districts do not spend <u>any</u> money on consultants, 3) in those districts with evaluation units achievement testing is the dominant topic and 4) in those districts there is limited attempts to use evaluative data for instructional improvement.

In summary, we can draw four main conclusions about the role of district consultants:

(1) There is limited research and underestimation of the potential role of district resource staff;

(2) District staff are crucial for introducing new ideas and facilitating ongoing interaction, dialogue, help and support;

(3) While district support staff are crucial, they are infrequently effective because (a) as individuals they often carry out their work on a one to one or one to group workshop basis rather than based on an approach geared to the management of collective change. Stated another way, district consultants themselves are not good knowledge utilizers when it comes to theories of implementation (they may be good KU's in regard to curriculum content); (b) districts have not set up organized program units as part and parcel of system planning and implementation.

(4) One of the greatest gaps in our knowledge is that we have only research on district specialists as a category. In reality, there are many different roles and forms of organization across districts. For example, it seems that in some cases district specialists may include administrators such as curriculum directors, while in others they may be excluded. In addition, there are a variety of staff specialists some of whom are general curri-

culum consultants, others are subject area consultants, and still others provide special services in counselling, special education, etc. In short, more specific research is needed to describe and examine the major line and staff roles commonly included under the general label of district specialists.

VI. SUPERINTENDENTS

All major research on educational innovation has shown that the role of the chief executive officer at the school district is critical for major change in the system. Almost twenty years ago Brickell stated the case as follows:

> "New types of instructional programs are introduced by administrators. Contrary to general opinion, teachers are not change agents for instructional innovations of major scope. Implication: To disseminate new types of instructional programs, it will be necessary to convince administrators of their value.
>
> Instructional changes which call for significant new ways of using professional talent, drawing upon instructional resources, allocating physical facilities, scheduling instructional time or altering physical space...depend almost exclusively upon administrative initiative...
>
> The superintendent may not be - and frequently is not - the original source of interest in a new type of program, but unless he gives it his attention and actively promotes its use, it will not come into being." (Brickell,1961:22-24, cited in Carlson, 1972).

However, we now know that superintendent "adoption" of new programs often bears little resemblance to "use" of these

programs by teachers. When use is examined the role of the superintendent is still critical, but it takes on a much more specific form. The research literature shows that general support or endorsement of a change means very little for subsequent implementation. For example, superintendents who adopt innovations for opportunistic reasons (bureaucratic, political, symbolic) do not pay attention to follow-up procedures necessary to support utilization (see Berman and McLaughlin, 1971 and the case studies by Gross et al, 1971, Smith and Keith, 1971 and Wolcott, 1977). In a follow-up case study of school districts Berman, McLaughlin et al (1979:37-47) describe in concise detail how one superintendent "transformed the organization". It shows a picture of active and specific involvement in changing the climate and programs in the district:

> "He [the Superintendent] visited every school in the district within his first year as superintendent, referred to teachers as "faculty", supported them during a teachers' strike, and invited their ideas on what needed to be changed. These activities were important as symbolic acts. Yet they would have been hollow had they not been backed by a changed administrative receptivity. The district demonstrated receptivity by creating incentives for teachers to take a chance on something new." (Berman, McLaughlin et al, 43).

Fullan, Miles and Taylor's (1978) case study of Adam's County document another example of the conceptual and interactional skills needed by a superintendent, if he or she is to be successful in bringing about change.

Deal and Nutt (1979) draw essentially the same conclusions from their review of administrators' behaviour in the ten districts in the Experimental Schools Program for Rural America. Conceptual skills and specific forms of involvement are summarized in four main implications formulated by Deal and Nutt:

> "First, administrators need to understand how educational organizations work.
>
> Second, administrators need to understand the process of change.
>
> Third, administrators need to be familiar with other change efforts.
>
> Fourth, administrators need guidelines that can be used to apply past lessons and general principles to specific change projects." (pp. 7-8).

Deal and Nutt provide numerous illustrations of the pitfalls and problems of attempting change without an adequate understanding of how organizations work, and without specific behaviours which arise from this understanding. The conceptions and skills need to be as sophisticated as the complexity of the process of multiple organizational change demands, which is one way of explaining why KU does not work effectively in most cases.

One of the more interesting discussions we should consider is Rosenblum and Louis' (1979:179) investigation of the effect on implementation of superintendent authority on the one hand, and classroom autonomy of the teacher on the other hand. They found that superintendent authority (number of decision areas influenced by the superintendent) was positively associated with implementation, and classroom autonomy

(number of classroom decisions that the teacher can make on his or her own) was negatively related to implementation. Rosenblum and Louis suggest that a degree of centralization is necessary for implementing comprehensive changes (across schools), and that strong norms of classroom autonomy may actually inhibit organizational and district wide changes - a finding somewhat similar to Daft and Becker's (1978) conclusion about adoption of college oriented versus high school oriented innovations.

On the other hand, in Havelock and Havelock's (1973:216) national survey, superintendents reported that they themselves were key participating factors in only 2% of the major innovations adopted in their districts.* Yet superintendents are making the major decisions in some districts as Rosenblum and Louis (1979) and Barrows (1980) have found, as well as have several case studies cited above.

One of the main problems in this whole area of research is the lack of any thorough research on the role of the superintendent. Almost no large scale research on the superintendency and innovation has been conducted since Carlson's (1972) work, which reports on superintendency behaviour in the years 1958-1963.** Not only is this research

---

*But they may have been key supporting or facilitating factors.

**There are probably other studies which I have failed to locate, but I doubt if they answer the questions posed at the end of this section.

outdated, it did not, of course, benefit from subsequent research which emphasizes the necessity of doing follow-up beyond adoption to utilization. One of the very few recent studies comes from a survey of school superintendents in New York State, which is not directly on KU (Volp and Heifetz, 1980). Part of the problem with these results is that they are based only on a 45% (N=96) return rate (total N=212) of which none of the six major metropolitan areas responded. There were some findings directly relevant to our quest. In listing the "most pressing issues locally", fiscal matters (99%), declining enrollment (44%), teacher unions (43%), community/public relations (42%), curriculum issues (39%) and student attitudes/achievement (36%) were the most frequently mentioned matters stated in response to an open-ended question. The latter two issues bear directly on the question of KU for school improvement and as indicated a little over one-third of the principals spontaneously mentioned the issues of student achievement and curriculum. Reinforcing the importance of my earlier mention of collective bargaining, the growth of teacher unionism was the most frequently mentioned major change over the last decade of 1969-1979 (mentioned by 39% of the sample; the next most frequently stated problem was cited by only 20% - the emergence of more vocal citizenry). The other findings are worth noting. There was near consensus (over 80% agreed) in response to three questions in which superintendents agreed

that they (i) cooperate willingly with researchers attempting to advance knowledge in the field, (ii) they secure outside help from experts when curriculum changes are being considered, and (iii) they read major journals. These results are inconsistent with some earlier findings reported (such as Miles et al 1978 report that districts did not want to use outside help even when matching funds were offered). Further, in commenting on needed training elements for superintendents the respondents mentioned personnel relations (41%), business and finance (19%), law (14%) most frequently. None mentioned management of change or curriculum issues - the closest category was 11% who referred to general coursework in administration and leadership. This is reminiscent of Reinhard et al's (1980) investigation of the role of the principal in which they explicitly asked about in-service needs of the principals. They experienced mostly non-responses and conclude:

> "This lack of reference to the staff development and professional growth of the administrator...probably mirrors the lack of thought and emphasis that has been given to what administrators need". (p. 15).

In summary, the findings on the role of the superintendent in KU are inconsistent, ad hoc and incomplete. A series of observations and recommendations can best describe what we know and need to know.

(1) As a generalization, it can be suggested that superintendents are important either for initiating or supporting KU efforts in school districts.

(2) This generalization does not take us very far. We really do not know what superintendents do. Under what conditions do superintendents initiate or support? What is meant by initiating, and by facilitating? How do superintendents in different size school districts vary in their roles? What is their relationship to, and what are the roles of other central office administrators and specialists (assistant superintendent, curriculum director, district consultants, etc.)? One would expect enormous differences in urban districts of 150,000 students compared to small town and rural districts with a few thousand students - the latter of which make up the large majority of school districts.* Nor do we know the organizational structure, roles and procedures as they vary across districts.

(3) In summarizing the research needs in relation to the superintendency and KU we need:

(a) good basic demographically representative studies of the role of superintendents in KU. These should include how superintendents

*The Department of Health, Education and Welfare's Digest of Educational Statistics shows that 26% of all U.S. districts have fewer than 1000 students, and only 1.2% have more than 25,000 students.

as individuals use knowledge in their work, and how they relate to other central staff, and to schools in initiating, supporting or facilitating KU. Variations in the nature of the role of superintendents at each of the three main phases of mobilization, implementation and institutionalization should be examined carefully, as well as the proportion of superintendents who are involved in KU efforts at school districts. As with the principal, studies are needed of how effective superintendents manage conflicts and role overload in order to devote some attention to KU for school improvement. Size, type of school district, geographic region, would be the main bases of framing the sample, (b) similar research should be carried out on the immediate subordinates of the superintendent (assistant and deputy superintendents, curriculum directors). These central administrators play a more direct role in KU in many districts, and little is known about the work they do, their relationship to superintendents, etc. Not the least of the problem is to come to grips with the myriad of titles and organizational structures, so that one can compare practices across districts.

VII. CONCLUSIONS: RESEARCH AGENDA

Let me first comment on the limitations of the review, and then turn to the main conclusions arising from the paper. This review was confined to the role of individuals and groups internal to the school district. The other five papers produced by the working group (footnote one) all address issues which should be related to the findings in this paper. Even at the district level, I did not examine the role of the community. It is rare that the community is an "agent" of KU, but it does sometimes happen. More frequently the community reacts to activities of the school or school district, but sometimes it acts as an indirect cause of KU (as when it applies pressure for reform - see Berman et al 1979). In any case, the role of the community should be examined in its own right.

As to the issues directly addressed in this paper, the following conclusions seem warranted. In general, the meaning and variety of KU has not been defined or examined separately in each of the sections on individual agents (Sections Three through Six). Sometimes the research refers to the use of a broad based program; and other times individual use of information is the focus. More conceptualization and corresponding research is needed on the meaning and outcomes of different types of KU (as suggested in Section One) in relation to the major actors at the district

level.

Taking each of the key groups in turn, the review identified several gaps which could form the basis of a research agenda:

Teachers

What is the average or daily KU behaviour of teachers, especially in relation to possibly "hidden" forms of KU which occur during individual teacher planning and weekly interaction among teachers? Such research should examine both the role that teachers play in collective efforts at program change, and as individuals using information in their daily decision-making. On both counts we do not know very much about the mobilization phase (that is, for collective efforts, the activities which lead up to adoption of new knowledge; and for individuals,the behaviour associated with individual planning and decision-making. Out of this research we should obtain a better sense of the extent to which teachers are engaged in new KU, and the factors which facilitate or inhibit these activities.

Certain contextual variables should be superimposed on the above research. Teachers at the elementary, junior high and secondary schools should be examined separately including the organizational processes related to KU as they may vary by school level. District type (rural, suburban, urban), school size, and the role of collective bargaining and teacher unionism should also be part of the basic set of

factors investigated.

Principals

As stated earlier we need two types of research on the role of the principal. The first type concerns the principal as knowledge user. To what extent and how do individual principals access and use knowledge external to the school, and internal to it? The second type of research refers to the role of the principal as an agent of KU within the school. Better conceptualization and empirical demographics are needed on the administrative, directive and facilatative roles discussed earlier. What are these roles and how do they vary empirically? It is particularly important that the different forms of KU be examined - for example, the role of the principal as an agent for collective program change, and his or her role as an agent of individual KU by teachers. In addition to discovering the nature and distribution of these roles by principals, it will also be necessary to compare situations according to the major contextual factors named above - elementary/secondary, rural/urban/suburban, and school size. In carrying out this research, one should be alert to discovering what causes principals to behave differently across different contexts, and within identical contexts. The availability of and efficacy of different pre-service, and in-service professional development experiences for principals in relation to managing and facilitating KU should also be examined

carefully. Finally, the rate and impact of principal turnover on KU should be directly investigated.

District Consultants/Specialists

There is very limited research on the role of district staff so that almost anything would make a contribution. It would be most helpful if some basic descriptive research were to be carried out in which the different roles, and organizational structures were identified across school districts of different type, size, region, etc. In addition to identifying the various roles, research is needed on how these people go about their work, and with what consequences for KU at the principal and teacher level. Conceptual and empirical work is needed on what characterizes these different roles (for example, the type of work started by Butler and Paisley (1978) for external linking agents, see also Lyons et al 1978)

In summary, the review of evidence indicated that district staff were frequently important sources of KU for teachers, but we know almost nothing about what these people do that is helpful (and what is not), nor do we know how prevalent the different behaviours are. Rate and impact of turnover, and longevity of positions (some district positions are temporary or short term) should be included in these studies.

Superintendents

Needed research on the superintendent was summarized at the end of the previous section and can be briefly restated. I observed that there has not been any large

scale investigations of what it is that superintendents do. Such research should include how the role of superintendents varies according to size and type of district; how superintendents think about and use knowledge as individuals; how they facilitate, direct, support, inhibit or block KU by others in their districts; what barriers they experience in carrying out their roles; how they organize and relate to others in the district office, to the school board and to individual schools, and what are the career patterns and turnover roles of superintendents in different settings? Similar research should be conducted on other central district administrators (assistant superintendents, curriculum directors, etc.).

The main assumption in this paper has been that individuals and groups internal to the district are the most important agents for KU. This corresponds to the main findings in the implementation literature that the characteristics of local settings dominate what happens to new ideas (e.g., Berman and McLaughlin, 1978). If this is the case, the review has identified some critical research gaps, since research knowledge about the KU roles of internal to the district personnel is very underdeveloped. Current emphases in the research literature on federal policies and programs (e.g., Raizen, 1979; Turnbull, 1980) and external linking agents (Louis, 1980) are important, but should be counterbalanced by equally intensive research on

teachers, principals, district staff and superintendents within school districts.

REFERENCES

ABRAMOVITZ, S. and E. Tenenbaum. High School '77, A Survey of Public Secondary School Principals, Washington, D.C. National Institute of Education, 1978.

AOKI, Ted T., British Columbia Social Studies Assessment, Vols. 1-3, British Columbia Ministry of Education, 1977.

ARGYRIS, C. and Schon, D. Theory into Practice, Jossey-Bass, 1978.

ARMOR, D. et al. Analysis of the School Preferred Reading Program in Selected Los Angeles Minority Schools, Santa Monica, Rand, 1976.

BARROWS, L. "Findings and Implications of the Thirteen School Study", AERA, 1980.

BERMAN, Paul. "Thinking About Implementation Design: Matching Strategies to Situations", in Why Policies Succeed and Fail, D. Mann and H. Ingram (eds.) Sage Publications, 1979.

_____, "Toward an Implementation Paradigm", paper prepared for Program on Research and Practice, NIE, 1980.

_____ and McLaughlin, M. An Exploratory Study of School District Adaptation, NIE, 1979.

_____ and McLaughlin, M. Federal Programs Supporting Educational Change, Vol. VII: Factors Affecting Implementation and Continuation, U.S. Office of Education, Dept. of Health, Education and Welfare, 1978.

ibid., Vol. VIII, 1978.

BRICKELL, Henry M. Organizing New York State for Educational Change, Albany, N.Y. State Department of Education, 1961, pp. 22-24.

BLUMBERG, A. and W. Greenfield. The Effective Principal, Boston, Allyn and Bacon, 1980.

BUTLER, M. and W. Paisley. Factors Determining Roles and Functions of Educational Linking Agents, San Francisco, Far West Lab, 1978.

BYRNE, D., S. Hines and L. McCleary. The Senior High School Principalship, Reston, Virginia, National Association of Secondary School Principals, 1978.

CARLSON, R. School Superintendents: Careers and Performance, Columbus, Ohio, Charles Merrill Publ., 1972.

CLARK, C. and R. Yinger. "The Hidden World of Teaching", AERA, 1980.

CROWSON, R. and C. Porter-Gehrie. "The School Principalship: An Organizational Stability Role", AERA, 1980.

DAFT, Richard L., and Becker, Selwyn. The Innovative Organization, Elsevier North-Holland, Inc., New York, 1978.

DEAL, Terrence E. and Nutt, Sam. Promoting, Guiding - and Surviving Change in Small School Districts, Cambridge, Mass. Abt Associates, 1979.

_____ and S. Rallis. "Promoting Interaction Among Producers and Users of Educational Knowledge", in Northwest Regional Educational Lab Interorganizational Arrangements for Collobora-tive Efforts: Commissioned Papers, Portland, Oregon, 1980, pp. 193-228.

Dissemination Analysis Group (DAG). Dissemination in Relation to Elementary and Secondary Education, Washington, D.C. Office of the Assistant Secretary for Education, 1977.

EASTABROOK, G. and M. Fullan. School and Community: Principals and Community Schools in Ontario, Toronto: Ministry of Educa-tion, OISE Press, 1978.

EMRICK, John A. and Peterson, Susan M., A Synthesis of Findings Across Five Recent Studies in Educational Dissemination and Change, Far West Laboratory, San Francisco, Calif., 1978.

_____. Evaluation of the National Diffusion Network, Vol.1: Findings and Recommendations, Prepared for U.S. Office of Education, Washington, D.C. 1977.

FARRAR, E.; J. DeSanctis and D. Cohen. Views from Below: Imple-mentation Research in Education, Cambridge: Huron Institute, 1979.

FULLAN, Michael. "An R&D Prospectus for Educational Reform", Northwest Regional Educational Lab, Interorganizational Arrangements for Collobprative Efforts: Commissioned Papers, Portland, Oregon, pp. 27-48.

_____."Research on the Implementation of Educational Change", Prepared for R. Corwin (ed.) Research in Organizational Issues in Education, JAI Press Inc., Greenwich, Conn. 1980.

_____. "The Relationship Between Evaluation and Implementation in Curriculum", in A. Lewy (ed.) Evaluation Roles, 1980.

FULLAN, M. School Focused In-Service Education in Canada, Prepared for CERI (Centre for Educational Research and Innovation), OECD Project on In-Service Education for Teachers (INSET), 1979.

_____ and A. Pomfret. "Research on Curriculum and Instruction Implementation", Review of Educational Research, Vol. 47, 1977, pp. 335-397.

_____, Miles, Matthew and Taylor, Gib. OD in Schools: The State of the Art - Vol. IV: Case Studies, Report for NIE, Washington, D.C., 1978.

GALANTER, Wynne. Elementary School Staff Support System Effects on Program Implementation and Job Satisfaction, Ph.D Dissertation, Fordham University, New York, 1978.

GORTON, R. and K. McIntyre. The Senior High School Principalship, Vol. II: The Effective Principal, Reston, Virginia, National Assoc. of Secondary School Principals, 1978.

GROSS, Neal; Giacquinta, Joseph B. and Bernstein, Marilyn. Implementing Organizational Innovations, Basic Books, Inc., New York, 1971.

HALL, G.; S. Hord and T. Griffin. "Implementation at the School Building Level: The Development and Analysis of Nine Mini-Case Studies", AERA, 1980.

HAVELOCK, R. and M. Havelock. Educational Innovation in the United States, Ann Arbor, Michigan, Institute for Social Research, 1973.

HOOD, Paul. Indicators of Educational Knowledge, Production, Dissemination, and Utilization: A Conceptual Framework, San Francisco, Far West Lab, 1979.

_____ and L. Blackwell. Indicators of Educational Knowledge, Production, Dissemination and Utilization: An Exploratory Data Analysis, San Francisco, Far West Lab, 1979.

_____ and L. Blackwell. The Educational Information Market Study, Vol. II and II, San Francisco, Far West Lab, 1976.

HOUSE, Ernest R., The Politics of Educational Innovation, McCutchan Publishing Corp., Berkeley, Calif. 1974.

_____, "Three Perspectives on Innovation", Program on Research and Educational Practice, NIE and Far West Lab, 1980.

HOWEY, Kenneth; Joyce, Bruce. "A Data Base for Future Directions in In-service Education", Theory Into Practice, Vol. XVII, No. 3, 1978.

HYDE, A. Capacities for Solving Problems: Problems and Problem Solving Methods for School Principals, Chicago, Center for New Schools, 1977.

Knowledge: Creation, Diffusion, Utilization, Vol. I, No. 1, 1979, Sage Publications.

KORMOS, James M. and Enns, Robin J. Professional Development Through Curriculum Development, Ontario Teachers' Federation, Toronto, Canada, 1979.

LARSEN, J. "Knowledge Utilization: What is It", Knowledge: Creation, Diffusion, Utilization, Vol. 1, 1979, pp. 421-42.

LEITHWOOD, K. et al. An Empirical Investigation of Teachers' Curriculum Decision-Making Processes and Strategies Used by Curriculum Decision Managers to Influence Such Decision-Making, Toronto, Ontario Institute for Studies in Education, 1978.

LINDBLOM, Charles E. and Cohen, David K. Usable Knowledge, Yale University Press, 1979.

LIPHAM, J. "Change Agentry and School Improvement: The Principal's Role" in Northwest Regional Educational Lab Interorganizational Arrangements for Collaborative Efforts: Commissioned Papers, Portland, Oregon, pp. 61-96.

LIPPITT, Ronald. "Consultation: Traps and Potentialities", The Dynamics of Planned Educational Change, McCutchan Publishing, Berkeley, Calif. 1979.

LORTIE, Dan C. Schoolteacher: A Sociological Study, The University of Chicago Press, Chicago, 1975.

LOUCKS, S. and M. Melle. "Implementation of a District-wide Curriculum: The Effects of a Three Year Study", AERA, 1980.

_____ and Hall, Gene. "Implementing Innovations in Schools: A Concerns-Based Approach", Paper presented at the annual meeting of the AERA, San Francisco, 1979.

LOUIS, Karen. "Meet the Project: A Study of the R&D Utilization Program", AERA, 1980.

_____, "The Role of External Agents in Knowledge Utilization" Program on Research and Educational Practice, NIE and Far West Lab, 1980.

_____, "Using Information in an Organizational Context", AERA, 1978.

LOUIS, K. et al. Linking R&D with Schools, Cambridge, Mass. Abt Assoc. 1979.

LYON, C.; L. Doscher; P. McGranahan and R. Williams. Evaluation and School Districts, Los Angeles, Center for the Study of Evaluation, UCLA, 1978.

MC LAUGHLIN, Milbrey, W. and Marsh, David. "Staff Development and School Change", Teachers College Record, Vol. 80, No. 1, 1978.

MC LEAN, Leslie D. "The Chastening of Educational Research", unpublished paper, Ontario Institute for Studies in Education, 1979.

MACHLUP, Fritz. "Uses, Value and Benefits of Knowledge", in Knowledge: Creation, Diffusion, Utilization, Vol. I, No. 1, 1979, Sage Publications.

MADEY, D. A Study of the Relationships Among Educational Linkers Roles and Selected Linker Functions, Doctoral Dissertation, Duke University, 1979.

_____ et al. Building Capacity for Improvement of Educational Practice: An Evaluation of NIE's State Dissemination Grants Program, No. Carolina, National Testing Service, 1979.

MILES, M. "Common Properties of Schools in Context: The Backdrop for Knowledge Utilization and School Improvement", Program on Research and Educational Practice, NIE and Far West Lab, 1980.

_____.Westgate Schools: A Case Study of Two Open-space Elementary Schools, Part III. New York: Project on Social Architecture in Education, Center for Policy Research, 1978.

_____, Sieber, Sam; Wilder, David, and Gold, Barry. Final Report, Part IV: Conclusions - Reflections on the Case Studies and Implications, New York: Project on Social Architecture in Education, Center for Policy Research, 1978.

NASH, Chris and Ireland, David. "In-Service Education: Cornerstone of Curriculum Development or Stumbling Block?" Paper presented at the Annual Conference of the Canadian Society for the Study of Education, Saskatoon, 1979.

OLSON, J. "Teacher Constructs and Curriculum Change: Innovative Doctrines and Practical Dilemmas", AERA, 1980.

ORLICH, D.; Ruff and Hansen. "Stalking Curriculum: or Where Do Principals Learn About New Programs?" Educational Leadership, Vol. 33, 1976, pp. 614-21.

OWENS, R. and C. Steinhoff. Administering Change in Schools, New Jersey, Prentice Hall, 1976.

PAISLEY, W.; M. Cirksena and M. Butler. Conceptualization of Information Equity Issues in Education, San Francisco, Far West Lab, 1979.

PHARIS, W. and S. Zakariya. The Elementary School Principalship in 1978: A Research Study, Arlington, Virginia, National Association of Elementary School Principals, 1979.

PRATT, H.; M. Melle and J. Metzdorf. "The Design and Utilization of a Concerns Based Staff Development Program for implementing a Revised Science Curriculum", AERA, 1980.

RAIZEN, S. "Dissemination Programs at the National Institute of Education 1974 to 1979", in Knowledge: Creation, Diffusion, Utilization, Vol. 1, 1979, pp. 259-92.

REGAN, E. and C. Winter. "Tasks Performed by Consultants to Influence the Curriculum Decisions of Teachers", in K. Leithwood (ed.) Studies of Curriculum Decision-Making (in press).

REINHARD, D. et al. "Great Expectations: The Principals Role and In-service Needs in Supporting Change Projects", AERA, 1980.

RUFF, T. and D.Orlich. "How Do Elementary School Principals Learn About Curriculum Innovations?", The Elementary School Journal, 1974, pp. 389-92.

RICH, Robert F. "The Pursuit of Knowledge", in Knowledge: Creation, Diffusion, Utilization, Vol. I, No. 1, 1979, Sage Publications.

ROSENBLUM, Shelia and Louis, Karen. Stability and Change:Innovation in an Educational Context, Abt Assoc., Cambridge, Mass. 1979.

SARASON, Seymour B. The Culture of the School and the Problem of Change, Allyn and Bacon, Inc., Boston, 1971.

SIEBER, Sam. "Incentives and Disincentives for Knowledge Utilization and School Improvement", Program on Research and Educational Practice, NIE and Far West Lab, 1980.

_____, Louis, Karen and Metzger, Loya. The Use of Educational Knowledge, Vols. I and II, Bureau of Applied Social Research, Columbia University, 1972.

SMITH, Louis M. and Keith, Pat. Anatomy of Educational Innovation: An Organizational Analysis of an Elementary School, John Wiley & Sons, New York, 1971.

STALLINGS, Jane A. "Follow Through: A Model for In-service Teacher Training", Curriculum Inquiry, Vol. 9, No. 2, Summer 1979, pp. 163-81.

THOMAS, M. A Study of Alternatives in American Education, Vol. II: The Role of the Principal, Santa Monica, Rand, 1978.

TURNBULL, B. "The Proliferation of Federal Systems Promoting Knowledge-Based School Improvement", AERA, 1980.

VOLP, F. and L. Heifetz. "School Superintendents in New York State: Role Perceptions and Issues Orientations", AERA, 1980.

WEISS, C. "Knowledge Creep and Decision Accretion", Knowledge: Creation, Diffusion, Utilization, Vol. 1, 1979, pp. 381-404.

_____. "Truth Tests and Utility Tests: Decision-makers' Frames of Reference for Social Science Research" (draft article forthcoming), American Sociological Review, Vol. 45, 1980.

WELLISCH, W.; A. MacQueen; R. Carriere and G. Duck. "School Management and Organization in Successful Schools", Sociology of Education, Vol. 51, 1978: pp. 211-226.

WOLCOTT, Harry F. The Man in the Principal's Office, Holt, Rinehard & Winston, New York, 1978.

_____. Teachers vs Technocrats. Center for Educational Policy and Management, University of Oregon, 1977.